LIBRARY
OCT 3 1929

PROPERTY OF
DENTAL LIBRARY
UNIVERSITY OF MICHIGAN
DON'T MUTILATE OR
REMOVE

The Dental Digest

October 1929

Editor~
GEORGE WOOD CLAPP, D. D. S.
Publisher~THE DENTISTS' SUPPLY COMPANY of New York

THE DENTAL DIGEST

VOLUME XXXV OCTOBER, 1929 NUMBER 10

CONTENTS

CONTRIBUTED ARTICLES PAGE

Factors in Oral Radiography. MATTHEW LOZIER, D.D.S. . . . 637
Centric Relation and Height of Occlusion or the Degree of Opening of the Jaws. J. S. LANDA, D.D.S. 646
Dental Caries and Pyorrhea. F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S. 654
Conserving the Teeth of the New York Police. JOHN WALKER HARRINGTON 665
Nutrition 672
Sociability Among Dentists. DAVID TABAK, D.D.S. 677
Two Studies of Aciduric Organisms. T. MORISHITA 679

FEATURES

DIGESTS 681
DENTAL ECONOMICS 687
PRACTICAL HINTS 695
DENTAL SECRETARIES AND ASSISTANTS 698
EXTRACTIONS 702
FUTURE EVENTS 703

THE DENTAL DIGEST
GEORGE WOOD CLAPP, D.D.S., EDITOR
ALLAN M. JOHNSON, A.B., D.M.D., ASSOCIATE EDITOR

Published monthly, by THE DENTISTS' SUPPLY COMPANY OF NEW YORK, 220 West 42nd Street, New York, U. S. A., to whom all communications relative to subscriptions, advertising, etc., should be addressed.

Subscription price, including postage, $1.00 per year to all parts of the United States, Philippines, Guam, Cuba, Porto Rico, Mexico, and Hawaiian Islands. To Canada, $1.40. Great Britain and Continent, $2.75. Australia, $3.25. To all other Countries, $1.75.

Articles intended for publication and correspondence regarding the same should be addressed EDITOR DENTAL DIGEST, Candler Bldg., Times Square, 220 West 42nd Street, New York, N. Y.

The editor and publishers are not responsible for the views of authors expressed in these pages.

Entered as Second Class Matter, at the Post-office at New York City, N. Y., January 29, 1909, under the Act of Congress, March 3, 1879.

THE DENTAL DIGEST

VOLUME XXXV OCTOBER, 1929 NUMBER 10

Factors In Oral Radiography

By MATTHEW LOZIER, D.D.S., Brooklyn, N. Y.

Formerly Instructor in Surgical Anatomy, Chicago College of Dentistry, Loyola University; formerly Instructor in Oral Surgery, New York Post-Graduate Medical School and Hospital

Radiography in Diagnosis

In spite of the numerous methods employed for the purpose of recognizing and diagnosing the existence and character of disease, radiography, particularly in the domain of the stomatologist and the oral surgeon, is unquestionably one of the most important. Yet it may be stated without great doubt that in spite of this recognized value its use is, up to the present, well out of proportion to its importance. This is due undoubtedly to the fact that, while we possess a good number of scientifically trained radiographers, the profession as a whole does not as yet take this science so seriously as it rightfully deserves. It should be understood that this statement is expressed not in any sense of approbation but rather as a plea for further study and application. This and the more intensive teaching of radiography in our professional colleges will undoubtedly result in a more rapid progressive development of this great science.

Radiography should become a major subject in our schools, and enough practical training should be given to the student to create an impetus for further postgraduate study and experimentation. The possibilities of radiography must be clearly demonstrated to the undergraduate in order to arouse his enthusiasm for the subject; he should be taught the full uses of radiography for diagnosis not only of gross lesions, as is frequently practiced, but also for the recognition of the important minute signs of the various physiological and pathological reactions in the periradicular tissues, as so masterfully described by Pollia. Of course, while the recognition of a bone or even a radicular fracture or a cyst requires a mere glance, the study and the diagnosis of the very minute, though equally important, changes in the cellular structures require patient and diligent examination of the involved as well as of the uninvolved areas. This examination should be performed under various degrees of brilliancy of the artificial viewing-light, with the diagnostician comfortably seated and the radiograms set orderly in a holder and fastened to the light instead of being held by hand, as is frequently done. The use of a magnifying glass is to be encouraged, as without it many details will undoubtedly escape recognition.

It is advisable also to resort occasionally to the examination not only of the negatives but of the positives as well. These, when placed side by side,

will frequently reveal and clarify conditions that would perhaps be otherwise overlooked. The viewing of the enlarged negatives and positives may also aid in diagnosis. In the maxillary molar areas, with their complex structural topography and frequent overshadowing by the overlying heavy structures, the usual methods of radiographic diagnosis will often be found inadequate. It is necessary, therefore, in that case to resort to purposeful distortion in the mesiodistal as well as vertico-horizontal directions and to the radiographing of the area from several angles. Under- and overdevelopment and under- or overpenetration should also be occasionally resorted to in order to facilitate diagnosis.

Because of the absence of complete appreciation of the value of radiography, because of the unsystematized and frequently unskillful radiographic technic, and also because of the inability to read the resulting radiograms satisfactorily, the average practitioner resorts to the use of radiography only upon special occasions instead of employing this aid in his work for at least the major part of the presented cases, if not for each and every one. Joseph A. Pollia, who is undoubtedly ranked among our leading radiographers, in replying to a query as to the necessity of having full-mouth radiographic examinations rather than an examination of selected teeth, says: "A definite oral diagnosis cannot be made at any time without a full-mouth radiographic examination, because it is not possible to determine by the clinical evidence alone just which teeth are undergoing pathological changes.

"Changes in the alveolar process usually are the result of intradental or extradental irritants, of essentially chronic nature, and their progress may be very slow for a time, and then, after a while, suddenly reveal their true extent. It is the experience of radiologists that, as a rule, the radiographic variations which indicate trouble are much more extensive than the changes in the teeth, or gingivae, or both would indicate. Therefore it is a very unreliable procedure to radiograph teeth, only when clinical evidence shows a degree of severity in the disturbance sufficient to presuppose a damage to the bone process.

"It is my opinion that the least important function of alveolar dental radiology is the detection of existing infection. I believe that its great function is the detection of early stages of disease. Early disease does not take long to make its appearance. It may show in a tooth, or alveolar crest, or peridental membrane which only six months before was normal. Pathological changes, for instance, may be seen within three months after a normal x-ray examination. Therefore the greatest measure of safety which is practical is that a full-mouth radiographic examination be made at least once a year in the average healthy mouth, and twice a year in those who have a low index of oral health."*

Roscoe L. Stout states: "It is hard to conceive what arguments some dentists can put to themselves for not making a full roentgen-ray survey of the teeth and jaws for every patient

* Joseph Andrea Pollia, M.D., *Dental Items of Interest*, May, 1929.

as regular routine practice. So many are still guessing. So many are still waiting for cavities to get big, for abscesses to become acute or, if chronic, to bring about conditions that incapacitate the patient. Then they begin to try to find out just how bad conditions really are. Even today, after all our talk and work along lines of prevention, many dentists appear to be content to wait for trouble to trouble them or their patients or, it would appear, would much prefer to have the patients themselves or, worse still, their physician secure a complete roentgen-ray survey. Some dentists apparently try to save their patients the expense, but it becomes more and more apparent every day that those in poorer circumstances need this service most because the rich can employ expensive ways and means of restoring their failing health. They can seek the service of eminent physicians and surgeons; they can take time to go to expensive health resorts and sanitariums or take extended expensive vacations in warmer climates or at the seashore. Those less fortunate must stick to the job and carry on though suffering from an impaired physical condition which might have been prevented by an earlier roentgen-ray survey of their teeth and jaws. Those people, besides having the health problem, have an economic problem, and to them a roentgen-ray survey that demonstrates pathologic conditions is perhaps the best expenditure of their money.

"The roentgen-ray is a means of making an examination in pathologic conditions. Usually, pathologic examinations are made at postmortem.

"By the roentgen-ray we can detect disease; we can study it, if we wish to; we can watch it develop and grow. After we detect it, we can eradicate it and then observe repair and restoration to a healthy state. In the roentgen-ray we have one of the greatest factors in prevention of dental disease. . . . .

"No dentist can successfully convince his patients of the necessity of a complete periodical roentgen-ray survey unless he himself believes in the necessity for such a survey. . . . .

"We cannot, it appears, prevent caries, except in a few selected and well managed cases in which intensive prophylactic treatment is instituted, but we can prevent caries from progressing to such a stage that the pulp, the life of the tooth, need never be sacrificed. The roentgen-ray is our most effective means of discovering caries in its early stage, and to fail to use it in every case is to lay ourselves liable to criticism."*

EXTRA-ORAL RADIOGRAPHY

While the use of the small intra-oral films in the average dental practice is neglected, the use of the larger films or plates is undoubtedly more so, and this in spite of the fact that a good bit of information may frequently be added to the radiographic diagnosis when the use of the larger films, particularly the 5x7 size, is resorted to. Cystic areas, impacted or supernumerary teeth and various other anomalous conditions will be revealed with the use of these larger plates in cases entirely unsuspected by the patient and the diagnostician. To the

* Roscoe L. Stout, D.D.S., *Journal of the American Dental Association,* May, 1929.

experienced and careful practitioner the use of other than the regular small intra-oral films is a matter of routine and is included in each radiographic examination.

A case or two to illustrate the importance of large plates may not be amiss here. A lady with a history of chronic and persistently annoying lacrimation was referred to the writer for a clinical and radiographic oral examination, as no definite pathological reasons for the existing condition could be discovered by the attending ophthalmologist. The patient had had, a short time before presenting, a complete intra-oral radiographic examination of fourteen films. These radiograms presented nothing to suggest any reason for the existing lacrimation. A 5x7 plate taken anteroposteriorly through the maxillary sinuses revealed a deeply embedded tooth in the floor of the left orbit. It is needless to say that this was the causative factor of the annoying condition.

Another patient, a lady of fifty-five, with a history of persistent insomnia, presented for an oral radiographic examination. This examination was ordered by her physician as a matter of final resort, as all previous attempts to clear the condition had failed, and these consisted of everything that was suggested, even including confinement to a sanitarium for a period of four months. The clinical examination showed nothing of importance, and the fourteen-film intra-oral examination, beyond a few single-rooted pulpless teeth with fairly good root-canal fillings, revealed nothing significant. Both maxillary third molars were absent with a history of having been removed years before. Both mandibular third molars were in situ and in perfectly normal relation to the second molars. A 5x7 plate of the left ramus disclosed a fourth molar lodged slightly below the sigmoid notch in the region of the mandibular foramen. The presence of this tooth was heretofore entirely unsuspected and its removal effected a complete disappearance of the insomnia.

When a patient presents for examination and consultation to the general practitioner, he rightfully expects a thorough, complete examination, of which the radiographic examination is an integral part. If for some reason the practitioner is reluctant to use the extra-oral technic, he should, in order to render conscientious service, refer his patient for this examination instead of creating an impression that all means for diagnosis have been exhausted.

Because this reference of patients for additional radiograms is at times very inconvenient, it should prompt one to learn this technic, which is comparatively simple and so superbly described and illustrated by Simpson. No specially built machine or tube, outside of the usual small-sized 10-milliampere Coolidge type tube, is needed here. The same is used for the intra-oral technic. The purchase of one or two 5x7 cassettes for extra-oral plates is recommended. The cassette is sold with two illuminating screens built into it. This enables the exposure time to be cut at least in two, while the clarity of the radiogram is not at all impaired. It is advisable, for the purpose of identification of the respective right and left sides, to paste two small letters *R* and *L*, cut out of

lead foil, on either side of the illuminating screen.

Two 5x7 films showing both rami, including the condyles and the coronoid processes as well as the mental foramina, and one anteroposterior film for the examination of both maxillary sinuses are necessary with every complete oral radiographic examination. In using the Simpson technic for lateral plates the cassette is held vertically and is retained by the patient's shoulder. To facilitate the supporting of the cassette, the writer has attached a wire handle to the lock portion of the cassette, which enables the patient to retain the plate firmly in position by taking hold of the handle with his hand, thus giving him a firm grip on the cassette besides eliminating the exposure of any parts of the fingers on the plate, which would otherwise be unavoidable.

TANK TECHNIC

Though the use of the tank in developing is for some reason or other contra-indicated by some, the many advantages derived from it, especially where a great deal of developing is done, warrant the writer to urge its use. An important advantage in using a tank is the fact that the practically daily procedure of changing the developing and fixing solutions, with the inconveniences and loss of time connected with it, is here done away with. The potency of the solutions depends, of course, mainly upon how much developing and fixing are done, while the quantity depends upon the evaporation. Evaporation can be greatly prevented by not permitting the tank to be left uncovered for any considerable length of time. The potency of the solutions will also greatly depend upon how thoroughly the film is washed in water after it is removed from the developer. The developer, being alkalin, neutralizes the acid in the fixer when the film is carried from the developer to the fixer. When the solutions in the tank are taken care of as prescribed above, they may be used safely, even in a busy practice, for a period of not less than two months, unless one is devoting one's time to radiography exclusively. As soon as it is noticed that a considerably longer period than five minutes at 65° F. is required for the developing, it is the proper time to renew the solutions. It frequently happens that during this two-months period, before the solutions require renewal, their levels in the tank compartments slightly lower because of use, and the uppermost portions of the films, the latter being held by a clip, will be left unimmersed and thus undeveloped. It is, therefore, advisable to observe each day whether the level of the solutions is high enough to cover the entire film. It is also advisable in preparing the solutions to prepare a little more than the tank requires, so that the level need never be too low for the films.

RETRIEVING A FILM FROM THE DEVELOPING SOLUTION

It frequently happens that during the process of developing in a tank a film will fall accidentally into the developer. If it is not removed immediately, it will of course become overdeveloped and perhaps even ruined. To prevent this occurrence, the writer has

devised a method whereby any film dropped into the developer may be easily and immediately retrieved without being exposed to the light. For this purpose a flat piece of shelving glass, slightly smaller in dimensions than the developing compartment, is obtained. Two thin ligature wires are attached to each end of this glass. These wires have to be a trifle longer than the height of the compartment so that they may be bent over the upper edge of the ends of the developing compartment and be within easy reach. This device is permitted to remain in the developer all the time. Thus, when a film drops into the solution, all that is necessary to be done is to lift the glass shelf out of the developer, with the aid of the wires, and the film will be found lying on the top of the glass. The alkalin nature of the developer will allow the glass, as well as the wire, to remain indefinitely in it without deterioration.

Ventilation of the Developing Room and Drying the Films

The writer has found the use of a small-sized electric fan attached near the ceiling in the developing room (which usually is not very large) most useful. The fan is used for the purpose of ventilation, which is absolutely necessary when a considerable length of time is spent in the practically hermetically sealed room. With the fan in motion, even such close quarters are quite tolerable and one is able to remain there with comfort, especially when a stool of appropriate height is provided. In this way correct and unhurried developing is possible.

The fan may be used for drying purposes also. Occasionally the necessity of immediate examination of radiograms presents itself in practice. Quick drying is therefore essential. For this purpose a wire, facing the fan, is extended from wall to wall of the developing room, and the film holder with the films placed on it is hung on this wire. The air current produced by the fan striking the films will dry them thoroughly within thirty minutes. It is advisable to keep the developing-room door closed during the process of drying, thus confining the air current to the films and at the same time keeping the dust out of the room. In order to accelerate the drying of the films and to eliminate water streaks on them, it is advisable to shake off as much water as possible after removing the films from the water bath. Viewing the films before they are completely dry is to be discouraged, because the drops of water accumulated on the bottom edge of the film may flow back on the part of the film already dried, possibly marring it to some extent.

The Developing-Room Door

It is practically always the case that the door of the developing room never fits well enough to exclude all light, the complete absence of which is essential for perfect results. (A good test to determine how light-proof the developing room is is to remain in it in total darkness for about five minutes; if there are any cracks, the light will shine through.) In order to correct this condition, ordinary weather stripping may be installed around the edges of the door.

EMERGENCY LIGHT IN THE DEVELOPING ROOM

Frequently during the process of unfolding films in the developing room a film will slip from the fingers and disappear, lodging somewhere where it could be found easily if sufficient light were obtainable. Turning on the white light would, of course, be impossible without spoiling all the films not yet developed, and the ordinary subdued red light used in the dark room is always stationary and will illuminate only a very limited area of the room. Many a good film may be saved if an extension light with a safety lamp, procured in any photographic store, is installed in the dark room and kept within reach.

FILING OF FILMS

The writer has found it very practical, while radiographing more than one area of the same patient, to place the exposed films immediately in a small box kept for this purpose in the lower compartment of the film safe in consecutive order. When the films are ready for development, this box containing the films is placed on the cover of the tank. All that is necessary to locate the films in the order in which they are intended to be attached to the multiple film holder is to take them out, one by one, as they are found in the box. By the employment of this method no further identification of the films is needed and all confusion is avoided.

When removed from the patient's mouth, a film is usually very moist. In fact, it is very often saturated through and through with saliva. Besides making the handling of the films unpleasant, if the films remain in this condition for any length of time, they may open at the edges and allow the light to penetrate. To eliminate such an occurrence and to make the work more pleasant, the writer has fastened a thick packet of blotters to the wall beside the film safe. Immediately after the film is removed from the patient's mouth it is placed between the blotters and pressed upon until thoroughly dry. It is then placed in the safe.

TANK COVERS

Most tank covers have small projecting handles built in the center of them. Because the writer uses the tank covers for a shelf on which to lay films, he has found this handle very inconvenient. He therefore has had it removed and has filled the opening with soft wax to restore the lightproof quality of the tank. The cover can still be easily lifted by its projecting edges.

TANK DRAIN

Although it is a great convenience to have running water installed in the tank, unfortunately it is not always possible. In order to improve the existing condition, at least to a certain degree, the writer has removed the standard cock supplied with the tank and has replaced it with an ordinary gas cock with an easily turning handle. A long rubber tube is then slipped over this gas cock, and the free end of the tube is put into a pail. In this way the tank may be emptied with little difficulty. This suggestion may not seem worthy of importance, but when running water is not available,

a great deal of time and annoyance will be saved by this arrangement.

Arrangement of Films in the Developing Tank

When a number of small individual films are developed simultaneously with the larger plates, the writer has found it advisable to hang all the small films on one side of the developing tank and the large ones on the opposite side. This arrangement precludes the possibility of dropping the small films into the developer while they are being lifted out, the occurrence of which is unavoidable when both large and small films are hung together on both sides.

Time-Developing

The question of timing during the process of developing is still rather unsettled, and while some technicians advocate the developing by time only, others strongly advise the developing by vision. These latter claim that owing to variations in the length of exposure, in the quality of the film emulsion, in the variance of density of the radiographed tissue, the degree of the freshness and temperature of the developer, as well as several other factors, the matter of developing by time is as impractical as it is scientifically incorrect. A compromise between the two methods is, to the writer's mind, a solution to this disputed question. It is, of course, advisable to adhere whenever possible to the 65° F. temperature of the water in the tank. This is necessary for the preservation of the quality of the emulsion, which is very delicate.

It is not amiss to mention here the fact that with the use of the tank it is possible to maintain the proper temperature of the developing and fixing solutions a great deal more easily than is otherwise possible. This is because of the proximity of the developing and fixing tanks to the large amount of water contained in the water tank.

The method here advocated is to ascertain first the temperature of the tank water, and if it is close to 65° F., it is quite safe to permit the films to remain in the solution for a period of about 3½ or 4 minutes (unless the extra fast films are used), undisturbed and not inspected. The films should then be removed and inspected in order to ascertain whether all the traces of image have completely disappeared (which is, by the way, the method of determining whether the process of developing is or is not quite completed). If any trace of the image is perceived during the inspection, the film is replaced in the developer for a short time. It is well to rock the developing tank gently in order to expedite the process of developing. The film is then removed and reinspected prior to the process of washing it in water. A twofold purpose is accomplished by the use of this method: (1) a definite length of time is saved each time while developing; and (2) the developing process, instead of being merely a mechanical procedure, becomes a scientific one with all the necessary adaptation for imprinting more or less correctly upon the surface of the film the true existing condition.

Plate-Holders

Although special metal frame-

holders are provided for handling x-ray plates while developing, the writer has found them entirely too bulky and inconvenient. Instead he uses two small ordinary film clips attached to each end of the plate. For proper handling, both clips should face in the same direction.

TUBE PROTECTION

The most important part of the x-ray machine is, of course, the tube. The quality of the resultant radiogram depends greatly upon the condition of the tube as well as upon the skill of the operator in handling it. The tube, when not overloaded and when carefully handled, will last a long time and will usually give little or no trouble. One of the chief requisites in caring for the tube is to prevent any dust from settling on the inside and outside of its glass shield. This accumulation of dust is frequently the cause of tube puncture and other trouble. To keep the tube well covered, the writer uses an ordinary closely woven linen pillow case over it when the machine is not in use.

X-RAY MACHINE, SWITCH AND HANDLE

The writer uses the type of machine which carries the switch on the left side (standing in front). Because the major part of the work is usually done on the right side of the machine, he has found it convenient to reattach the switch to the right side. This small change saves much time. He has deemed it necessary also to add an extra handle to the back of the cabinet of the machine. This enables one to pull the machine back without having to push it back from the front.

832 Eastern Parkway

Centric Relation and Height of Occlusion or the Degree of Opening of the Jaws

By J. S. LANDA, D.D.S., New York, N. Y.
Chief of Prosthetic Clinic, New York University College of Dentistry

In taking the centric relation or the bite, as it was called in the old terminology, one very important factor has not been given so much attention in dental literature as it really deserves. This factor is the height of the occlusion or the degree of opening of the jaws.

It has been pointed out that the three important features in full denture prosthesis, mechanical efficiency, esthetics and phonetics, are so closely interrelated that whenever one of them is imperfect the other two also will be impaired more or less. Thus an imperfection in a denture from a phonetic point of view will unfavorably affect its mechanical efficiency in mastication as well as its esthetic aspect.

Is it not logical, then, to assume that any denture with an incorrect degree of opening of the jaws will fall short of perfection in the three important features mentioned above? In the majority of cases we meet with dentures with an insufficient degree of opening. The teeth are not seen properly. In some instances this condition is so pronounced that the patient looks edentulous. His friends from Missouri he can convince of the contrary only by actually taking his denture out of his mouth. In rare instances the degree of opening is too long, and the patient consequently gets so tired from such a denture that real comfort is derived only when the dentures rest in peace in a glass of water or anywhere except in his mouth.

Observation has shown that in many cases ear trouble is caused by dental conditions. This will probably hold true of dentures with an insufficient degree of opening, in which the condyle heads would go back too far with each masticatory effort and would, so to say, traumatize the tympanic plates or the temporal bones. In the event of an excessive degree of opening it is not the hearing organ that is affected but the muscles of mastication and the ligaments, for they are overstrained by being unable to assume their position of rest.

It would seem illogical to expect an artificial limb one centimeter too short or too long to function properly from the point of view of mechanical efficiency, esthetics and (si verbis audacia detur) phonetics. However, I have seen artificial dentures much more than a centimeter short of the proper degree of opening which were, nevertheless, expected to give good service to their wearers. In endeavoring to give to our patients dentures with balanced articulation we have now at our disposal good adjustable articulators. Yet, whatever the articulator that may be used, an insufficient or excessive degree of opening will probably have some ill effects upon the lateral and protrusive movements. Let us not lose sight of the fact that the degree of opening is

of basic importance in full denture prosthesis.

Moreover, the degree of opening will materially affect the jaw, ridge and occlusal relationship of the teeth. In order to make that clear, we have to

Fig. 1
A patient with old dentures.

Fig. 2
Front view of the same patient as in Fig. 1, with new dentures constructed according to the measurements described in this article.

Fig. 3
Profile of the same patient as in Figs. 1-2, with the old dentures.

Fig. 4
Profile of the same patient as in Figs. 1-3, with the new dentures.

accept the fact that centric relation is the relation of the mandible to the maxilla, not in absolute state of rest but in a comparative state of rest. In other words, in the physiologically

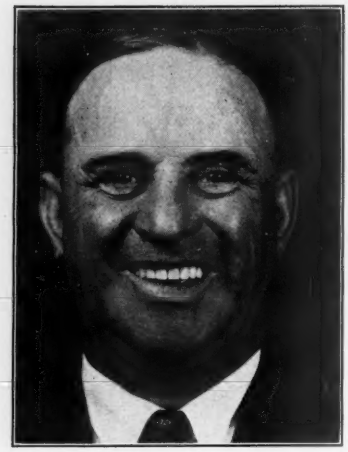


Fig. 5
Front view of the same patient as in Figs. 1-4, showing the new dentures while smiling.

functioning dentition centric relation is that relation of the mandible to the maxilla in which the cusps of the mandibular teeth are in contact with those of the maxillary teeth without any strain. In complete relaxation of the muscles of mastication and the ligaments the mandible hangs downward and there is no contact between the maxillary and mandibular teeth. The distance between the occlusal surfaces of the maxillary and mandibular teeth when the muscles of mastication are in a state of absolute rest varies in different individuals, and it would be exceedingly difficult to measure these differences. I believe that Sears expresses best the positional relationship of the mandible to the maxilla in centric relation when he says: "Centric relation is the most retruded rest position of the mandible from which lateral movement can be made." In this case the term *rest position,* I understand, is relative, and the words *most retruded rest position of the mandible* imply that in the physiologically functioning dentition the teeth should come slightly in contact without any strain, while the condyle heads rest in the glenoid fossae equally without a strain. With this conception of centric relation let us see what would happen in an edentulous case when the degree of opening is (1) correct, (2) insufficient, or (3) excessive.

In the first instance we would have a normal relationship of the jaws and ridges. In the second case we would have a condition resembling Class III, Angle's classification of malocclusion, while in the third the condition would resemble Class II, Angle. This is due to the fact that in opening and closing the jaws the mandible is rotating about its condylar axis and in doing so it must either retrude from or protrude

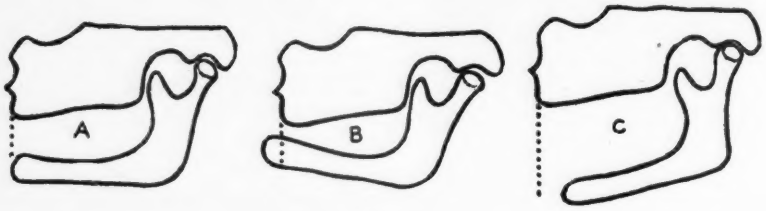


Fig. 6
The position of the mandible at various degrees of opening.
A—Correct. B—Insufficient. C—Excessive.

to a perpendicular line in front of it. Fig. 6 illustrates this relationship.

It would perhaps be clearer if we tried to visualize it from the point of view of Paul W. Simon's three-dimensional diagnosis of malocclusion. Normally, according to the findings of Simon, the orbital plane passes through the lowest point of the inferior border of the orbit, the cusps of the canines and the gnathion of the chin when a physiological dentition is in centric relation. If we make an excessive opening, the gnathion of the chin will be found to be distal from the orbital plane, whereas with an insufficient degree of opening (in edentulous cases) the gnathion will be found to be mesial to the orbital plane. It thus follows that with an excessive degree of opening, from a prosthodontic point of view, there will be simultaneously a mandibular and alveolar retraction, while with an insufficient degree of opening there will be simultaneously a mandibular and alveolar protraction. These two latter statements were not made by Simon, but are conclusions at which I have arrived for prosthetic purposes in the matter of the degree of opening in the course of thinking along the lines suggested by Simon's method of diagnosis.

Another difficulty that often may result from an insufficient degree of opening is the crowding of the tongue back into the throat, thus giving rise to pathological conditions. The proper degree of opening would provide the required room for the tongue by an increase in area, while other remedies for the same condition, like moving some of the teeth labially or buccally, provide room only in strips.

Having seen the ill effects of an improper degree of opening, let us briefly analyze the means at our disposal at the present time for determining the correct height of occlusion:

(1) Photographs of patients before the loss of teeth are materially helpful in some cases. However, the general practitioner does not often meet with such good fortune. Either the patient has no photograph, or it may be too old to be of real value. In addition, the fact that such photographs as are brought to the dentist are not of standardized size makes it difficult to transfer measurements from them.

(2) It has been suggested that from an esthetic point of view three vertical distances ought to be equal: from the roots of the hair to the nasion, from the nasion to the subnasal point, and from the subnasal point to the chin. This method has a serious disadvantage in the fact that two of the landmarks (the roots of the hair and the subnasal point) are not fixed. Though this may hold true in the ideal type of beauty, these conditions are not generally prevalent.

(3) Last, but not least, facial contour is depended on in determining the correct degree of opening.

Prothero, in his textbook on prosthetic dentistry, says: "The prothetist should be a master of his art—one who can at will imitate nature in her ideal as well as less typical forms and moods. From the nature of his vocation he should be an anatomist, a sculptor, an artist and an artisan, thorough and proficient in each field mentioned, in order to fulfill to the highest degree the requirements imposed upon him by his profession." While this represents the

goal toward which we should all strive, we cannot expect to exceed human limitations. Fortunately we are not left to our artistic sense alone. Prosthetic literature and practice boast the name of many an inspiring and great practical leader.

Yet the subject of the degree of opening and the plane of occlusion has not attracted sufficient attention and thus we are without a definite guide in this problem. It therefore seems to me that we are in need of a scientific method to determine these important relationships by accurate measurement. It is well known that all the natural sciences, physiology, zoology and botany, make extensive use of a great variety of measurements in solving their problems. Thus they have succeeded in establishing an average of normality for all living beings. Deviations from this average within a reasonable range constitute the realm of normality, whereas the more pronounced deviations, one way or the other, represent the abnormalities. These sciences rarely set up the fallible human eye as witness, jury and judge, in order to reduce the subjective element to an absolute minimum. It is a well-known psychological fact that different persons observing the same thing render disagreeing accounts of their observations even in the case of the simplest objects. We have all surely experienced in our daily work that in mixing plaster for impressions we seldom get close to the exact quantity needed by merely guessing at it with the eye. We have all found measurements or weight to be far more satisfactory. Even the artist, whose work is essentially imaginative, does not depend exclusively on his eye for exact proportions. Should a sculptor, for instance, set out to produce a hundred busts of Abraham Lincoln of one size, he would undoubtedly measure and weigh his material carefully. Otherwise he would run the risk of having great, medium and small Lincolns, though we know of only one great Lincoln.

Just as medicine does not deal with an ideal heart-beat, an ideal respiratory capacity or an ideal number of white and red blood cells but rather with scientifically determined averages, so we ought to seek the aid of scientific measurements in our work. It seems to me that we have been aiming too much at the unattainable ideal rather than at the practical as represented by a scientific average. To the individual with a good dentition that has given him satisfactory service during a lifetime what does it matter whether or not it conforms strictly to the standards of the spherical ideal, the equilateral triangle ideal and the ideal occlusion of the "secretum apertum"? His dentition has given him good service probably because it is in harmony with his general constitution and in conformity with the anatomical structure of his head, independent of whether or not it conforms with our ideals.

With this in mind I have constructed an instrument in an attempt to devise a practical means of measuring the degree of opening of the jaws and the plane of occlusion. As I am only at the beginning of this work, the results of the measurements that follow are, of course, not final. Future research will probably revise these figures and bring them nearer to accuracy. Thus far I have been able to collect data on only about 100 heads of individuals

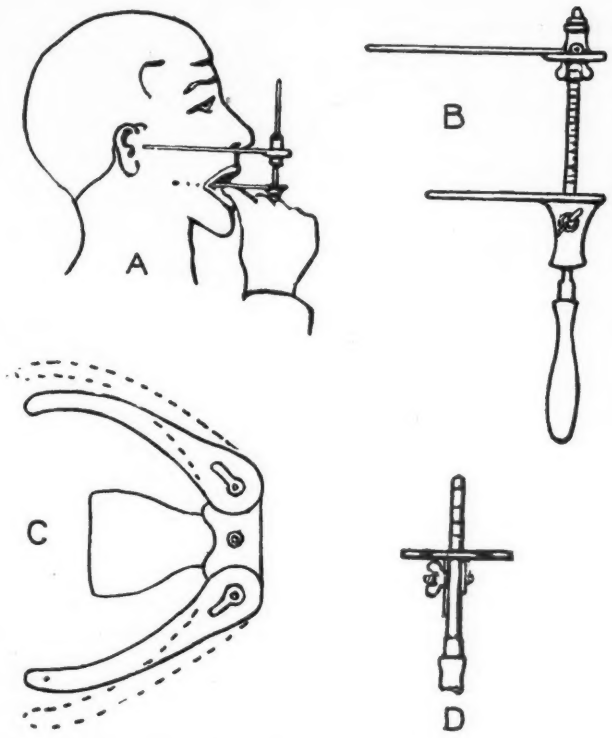


Fig. 7

A—Instrument used to determine the plane of occlusion, in position
The patient is holding the mouthpiece with his thumb against the upper occlusal rim, while the bow of the instrument is adapted to the ear-nose plane. The plane of occlusion should be parallel to the ear-nose plane and between 25 and 30 mm. from it.
B—Handle, mouthpiece and bow. C—Mouthpiece and bow. D—Handle and mouthpiece.

of at least five different nationalities. These were male students of New York University Dental College between 22 and 26 years of age.

In this connection it will be interesting to note that while measuring Eskimo and Mongolian skulls at the Smithsonian Institute, Washington, D. C., and the Wistar Institute, Philadelphia, Pa., I found that, while the differences between the two groups were pronounced, there was a fair average relationship within each group between the two distances of the head, from the top of the head to the Frankfort horizontal plane and from the Frankfort horizontal plane to the lowest point of the chin. This suggested to me that from measurements on the living, grouped as to race, sex, nationality, and period of development of the individual's life, we ought to be able to find an average relationship of these two distances within each of the groups

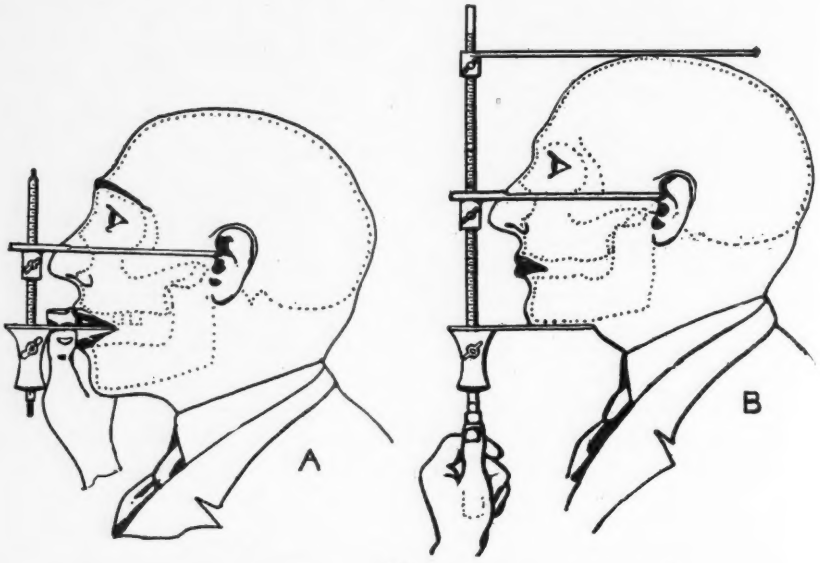


Fig. 8

A—Measurements being taken from the Frankfort horizontal to the plane of occlusion.
B—Instrument in position for determining the degree of opening of the jaws from the top of the head to the Frankfort horizontal and from the Frankfort horizontal to the lowest point of the chin.

that would be of great practical value.

As far as the 100 head measurements mentioned above are concerned, I found an average relationship of approximately 12:9. In other words, in the more or less normal dentition the average distance from the top of the head to the Frankfort horizontal plane is 12 cm., and the distance from the Frankfort horizontal plane to the lowest point of the chin is 9 cm. The Frankfort horizontal plane passes through the two orbits (the two lowest points on the inferior border of the orbit just beneath the pupil when the patient is looking straight ahead) and the two ear points (the upper parts of the tragi). The plus and minus deviations from this average measurement are great. Nevertheless I consider this scientific guide of practical value in our daily work in establishing the degree of jaw separation for full denture prosthesis. During the process of taking measurements the patient should be seated so that the Frankfort horizontal plane should be the physiological plane of orientation, that is, should be parallel to the floor. As to the plane of occlusion, measurements that I have been able to secure so far show that the average distance from the ear-nose plane (alae of the nose and middle of the tragi) to the plane of occlusion is 28 mm. This result of my preliminary measurements is offered to you here merely for the purpose of giving a synthetic idea of such measurements.

This fundamental synthesis will be followed later by an individual analysis, which will inform us about the behavior of these measurements when applied to the same nationality and sex at their different periods of life and development.

This apparently opens a large field for fruitful research work, affording ample opportunity for making valuable additions to our knowledge of the subject of the degree of opening and the plane of occlusion.

209 East 23rd Street

[JUDGMENT OF DENTISTRY BY THE PUBLIC]

The public is not logical in its judgment. It is constantly judging a class by its knowledge of, or experience with, a single individual or with a few individuals of that class. Public opinion is likely to proceed rapidly from a few particular instances to a broad generalization. Therefore a very few unworthy dental practitioners may prove of great injury to the public status of the entire profession and thereby become a detriment to each member of that profession. A single ill-educated, poorly trained, unethical and incompetent practitioner in a community may diminish the reputation of all the members of the dental profession of that vicinity. That such an outcome is unjust does not alter the fact. Therefore it becomes of direct personal interest to each dental practitioner that recruits to the practicing profession shall be of good character, well educated in the basic fundamental knowledge pertaining to dentistry, well trained, and competent to practice efficiently.

—WAITE.

Dental Caries and Pyorrhea*

Another Approach

By F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S.

Second Article

In the previous article we considered why a new visualization of the causes behind modern dental conditions was necessary, and how the changes from the normal which I believe to be responsible for tooth destruction were brought about. In this present article I propose to discuss the manner in which dental caries and pyorrhea are brought about as the result of the environmental conditions that we have considered.

I have stated that I believe that the predisposing cause of caries is a tendency to an acidosis, which in compensation uses up the necessary alkalies of the body for neutralizing purposes, and that consequently these are not available for the purposes for which they were intended. As a result of this, not only will there be a shortage of lime salts for the sufficient calcification of unerupted teeth, but in addition there will result a shortage of those salts on which the saliva depends for the maintenance of its reaction, a matter which is of importance in the post-eruptive calcification, and which may lead in favorable circumstances to definite decalcification.

The Blood and Salivary Reaction

At this time I propose to consider only the result of changes in the acid base balance of the blood on the reaction of the saliva, together with the effect on the teeth of any such change.

Professor Gies has stated that "it is biologically absurd to deduce anything of diagnostic importance from the nature and degree of reaction of any specimen, or pair of specimens, of saliva from any one under any conditions." A statement such as this is sufficiently dogmatic to arrest attention, and, if it is true, then any further time spent in the consideration of a correlation between dental conditions and salivary reaction is indeed wasted. My experience, however, is such that I cannot subscribe to Gies' conclusions. It is, in fact, so diametrically opposite to them that I am inclined to think that he has been led to this inference on a false idea of what it was necessary to demonstrate if some such correlation be indeed a fact.

We are all agreed that the commencement of dental caries is a decalcification of the enamel, and that, when this has proceeded to such an extent that the dentin has been exposed to the fluids of the mouth cavity, formation results. We must all realize, in addition, that this cavity having once been formed, no change whatever in the conditions which produced it will be able to heal it, except possibly in those well recognized cases of arrested decay with which we are familiar. It is possible, for instance, that at the time of the decalcification of the enamel the

* Reprinted from *The Dental Magazine and Oral Topics*, July, 1929.

saliva *was* acid, but by the time that we discover the cavity this has altered and has become alkalin. The presence, therefore, of tooth cavities and an alkalin saliva neither proves nor disproves a connection between the two, and any figures collected on this basis lead nowhere. If, however, it were possible, which I do not think it is, to get figures at the time of decalcification, the matter might easily wear a different aspect.

One of the great difficulties that has presented itself to workers in this field has been the fact that the reaction of the saliva would seem to change not only from day to day but even from hour to hour and, in certain circumstances, from minute to minute. These changes are so bewildering that it is not surprising that the experimenters, being unacquainted with the circumstances on which the reaction at any particular moment depends, should give up the search in disgust with some such dictum as that of Gies.

If, however, we will consider the factors on which salivary reaction rests and are not particularly bound to any narrow theory of the etiology of such conditions as dental caries, I believe that the whole matter becomes plain, and that a definite correlation will be established.

In the first place, I would visualize caries as taking place in stages, not of necessity continuous, and that when circumstances are favorable there will occur some decalcification of the dental enamel at some particular spot. If these circumstances change, this decalcification may give place to recalcification and any damaged enamel be reconstituted. If, however, decalcification proceeds at a greater pace than recalcification, then sooner or later the dentin will be exposed and a cavity formed. Now, if the reaction of the saliva has any connection whatever with the decalcification, this will depend not so much on what this may be at any particular moment as on the greatest acid point to which it can reach in the changing circumstances on which the reaction depends, the amount of swing from time to time from this point to that of greatest alkalinity, and the mean around which these changes take place.

Constantly Changing

The reaction of saliva, depending as it does upon metabolic circumstances which themselves will be constantly changing, will of necessity be an unstable matter, changing with these changing circumstances, some of which will be physiological, such as the processes of digestion; some physiological reactions to every-day conditions, such as hard muscular or mental exertion or emotional upsets; some physiological reactions which are intensified until they become pathological, such as the excess of certain kinds of foodstuffs; and some definitely pathological to start with, such as acute illnesses and infections. As a consequence, no satisfactory data can be collected on which to base a correlation with dental conditions until we have some more or less definite basis which we can consider as a normal mean on which the deviations arise. Let us see, therefore, if it is possible to arrive at some figure or figures which can be considered to be normal in ordinary circumstances.

Reaction is now represented in terms of a formula designated pH, of which pH 7.0 is the point of absolute neutrality, figures above this representing an increase in alkalinity, i.e., a diminution of the hydrogen ions present, and those below representing an increase in acidity, an increase in hydrogen ions. Thus, pH 8.1 is more alkalin than pH 7.0, and pH 6.8 is more acid.

Investigators' Widely Varying Results

A series of salivary reactions in 296 individuals has been published by Starr of Philadelphia, who found a variation from pH 5.4 to pH 8.0. Another series of 294 by Bunzell of New York varied from pH 5.3 to pH 7.2, and a third of my own from 117 patients showed differences between pH 4.9 and pH 8.0. Now, this variation is very wide indeed, much wider in point of fact than just a knowledge of the figures without an appreciation of exactly what the formula pH implies would lead one to suspect, and unless we can arrive at some knowledge of the circumstances in each case of the patients from whom the estimations were made, irrespective of the condition of their teeth, it is quite reasonable to despair of finding any relation between this reaction and any accompanying condition.

Fortunately, some knowledge of the circumstances is available, which will allow of some classification of the figures.

Starr's estimations were undertaken as part of a research into the metabolism of stammerers, patients whom it is apparently possible to divide into two categories, viz., the sub-breathers and the psychopaths. In order to compare the salivary reactions of these two groups, it was necessary to get figures from presumably healthy persons. These gave a variation between pH 5.9 and pH 7.2, a variation still large, certainly, but considerably smaller than any yet arrived at. The group of the sub-breathers showed variations between pH 5.4 and pH 6.5, whereas the psychopaths gave figures from pH 6.9 to pH 8.0.

A Striking Arrangement

Now, if these figures are arranged in a curve, as in Fig. 1, the abscissor being the reaction of the saliva and the ordinate the percentage of individuals giving this reaction, it will be seen that the normal come in between the abnormals and are all around the neutral point, whereas the sub-breathers are all to the acid side of this and the psychopaths to the alkalin side.

This arrangement is rather striking. Let us see what lies behind it. The most noticeable difference between these two groups of stammerers is in their breathing habits. The former, as their name implies, consistently underbreathe, with the result that they never quite get rid of their CO_2, which will tend to be present in their blood to a greater extent than normal. The latter group, on the other hand, on account of their chronically excited state rather overbreathe than otherwise and consequently will tend to wash out from their blood an additional quantity of this acid gas. The result of this will be that the former will have a constant tendency to an acidosis, whereas in the latter this tendency will be toward the opposite extreme, that of an alkalosis, and this tendency will be reflected in

the reaction of their salivas, with the result that we find. Now, the question of respiration and respiratory habits is intimately bound up with that of metabolism, as we have seen, any increase in the formation of acid being followed by hypernea in an attempt to excrete additional acid in the form of CO_2, and any increase in alkali, which will upset the proportion of acid to base, limiting the excretion of this gas by diminishing rate and depth of breathing. In the case of these stammerers, therefore, there would appear to be some upset in the mechanism by which this regulation is brought about, as a result of which it is possible for a different threshold of stimulation of the respiratory function to have been brought about, and this may possibly be the result of suprarenal activity. The point of interest, however, to us at this time is the definite connection between salivary reaction and respiratory function and through this to metabolic circumstances, together with, for the same reasons, the emotional state of the individuals.

DEFINITE RELATION FOUND

Starr found that there was a definite relation between the CO_2 content of the air in the lung alveoli and the reaction of the saliva; the greater the former, the more acid the latter. In other words, a tendency to an increase in the acid of the blood produced an increase in the acid of the saliva and lowered the pH of that secretion, this being the result not so much of an increase in blood acid, which in reality remains a tendency only, but of the compensation that is necessitated and the attempt to eliminate this acid in order to regain a balance of acid to base, and through this a normal blood reaction.

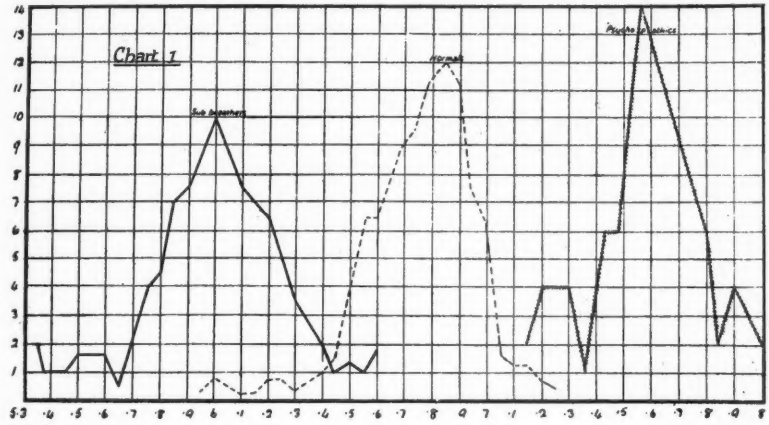


Fig. 1
Chart showing the salivary reactions of (1) healthy persons, (2) sub-breathers, and (3) psychopaths.

Continuing his experiments, Starr found that any kind of emotional stimulus increased salivary alkalinity,

in that it produced an overbreathing and an excessive elimination of CO_2, as also did a voluntary overbreathing, especially when a large dose of alkali had previously been administered.

Bunzell's figures explain the variations in salivary reaction still further, in that in every case he has included the age of the individual. By taking his figures and dividing the patients into decades it is possible to draw curves similar to those in Fig. 1, with which they can be compared. These are given in Fig. 2.

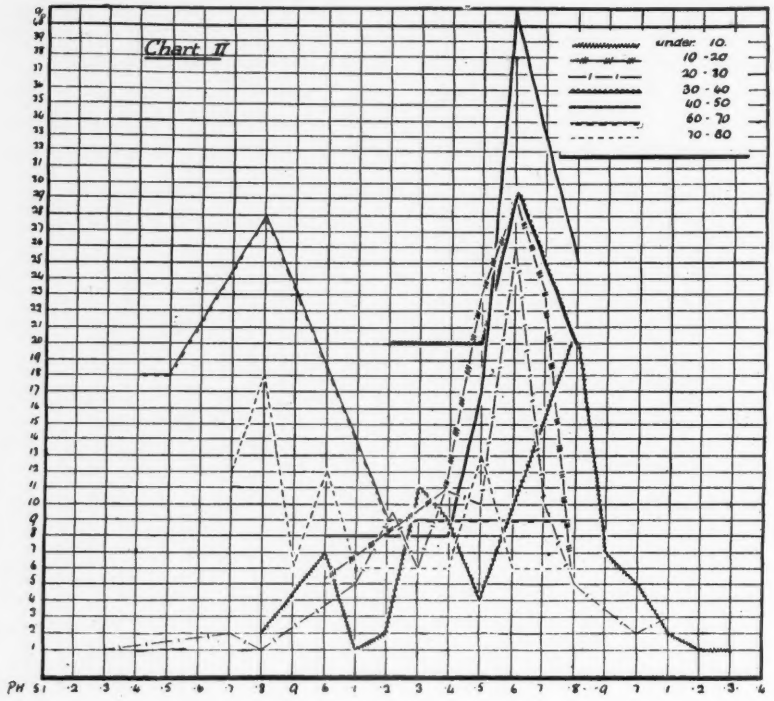


Fig. 2
Chart showing the differences in salivary reaction at various decades.

Material Differences in Each Decade

A study of these curves will show that there are very material differences in each decade. Starting with that 30-40, we see that the variations are very small indeed from pH 6.2 to pH 6.8 only, with the very large majority between pH 6.5 and pH 6.8. This would suggest, from the circumstances that we have just been considering, that at this time of life no great strain is thrown upon the compensating

mechanism of the blood, and that conditions of acidosis and alkalosis are comparatively rare. It will be further noticed that all these individuals give figures of salivary reaction that are close to, but to the acid side of, neutrality.

In the decades earlier than this the most noticeable feature is the straggling of the curves across the chart, although the majority of the individuals show a reaction toward the alkalin extremity, those of babyhood extending farthest in this direction. This suggests a somewhat greater difficulty in maintaining a blood balance without calling into play the regulating mechanism, and that circumstances more easily arise in which an increase in the elimination of acid is essential.

In the decade 40-50 there is a notable increase in the number who show a reaction of the saliva to the alkalin extreme, the very great proportion being at this end of the scale. These we will discuss a little later.

There being no individuals among Bunzell's patients between 50-60, this curve is absent from the chart, but it will be seen that in the later years the tendency is for the peak of the curves to pass over to the acid side with a straggling tail toward the alkalin end, suggesting some great change in metabolism, some great need for excessive acid elimination, and therefore an acid saliva.

We see, therefore, that age has a distinct bearing upon the matter that we are considering, in addition to the circumstances of respiration and emotion, the connecting link between all three being metabolic circumstances. We notice that in early middle life the normal salivary reaction is more acid than in childhood and adolescence, and that in old age this tends to become more acid still, the peak of the curves being pH 6.6 in the first group, pH 6.9 in the second, and pH 5.8 in the third.

Normal Mean Varies with Age

Realizing as we now do that salivary reaction is a mirror of metabolic activity, the reasons behind these differences become obvious, and it is a matter which I shall consider in a subsequent article, but the point which arises is that we are now in a position to lay down some rule as to what constitutes a normal mean of salivary reaction for any particular individual, and we see that this will be dependent upon the age of the person in question. The normal reaction will differ during the different periods of life. In the early ages it will be more alkalin than in the middle years, and a figure that would be normal for a boy of 16 will be abnormal for a man of 30, whereas in elderly and aged people a normal reaction will be represented by a figure that will be more acid still. To give some more or less definite figures to act as a guide: a reaction represented by pH 7.2 would seem to be well within the normal limits for a child, but would suggest metabolic upsets in a man of 45. A reaction in a child of pH 6.5, which would be more or less normal for a man of 35, would represent excessive acidity in a boy of 12.

With regard to the curve of the decade 40-50, which we have noticed as showing a large proportion of individuals giving a reaction very considerably to the alkalin side, I would sug-

gest that this needs further consideration. This excess alkalinity is explainable in the growing period of childhood and youth by the fact that alkalin salts are required in great quantities for growth and development. If the individual is healthy, these are readily available and their excess shows itself in the salivary reaction. In this 40-50 period, however, these are not required in the same quantity and if present represent rather a liability than an asset and would show a tendency to an alkalosis rather than a physiological purpose.

Incidence of Dental Disease

Let us see how this chart in Fig. 2 explains the incidence of dental conditions as we know them from clinical experience. Kirk has said: "Every practitioner knows that the susceptibility to dental caries is a thing that comes and goes. So clearly and so broadly is this fact recognized that it is generally conceded among dentists that youth is the period of the greatest susceptibility, and, assuming normal conditions of health, this tendency is markedly diminished, if indeed a period of immunity does not normally supervene, when adult age is reached." Raper believes that "during the teens and the twenties there is especial susceptibility to dental caries. . . . After thirty there is a growing immunity to caries and a special susceptibility to pyorrhea." I suggest that this summing up represents sufficiently well the clinical experience of the majority of dentists, so that I will go no farther into the matter but accept it for our present purpose.

The early susceptibility to caries is illustrated in this chart by the long tail toward the acid side in these decades, brought about by those conditions, so common in children, which upset metabolism. The early middle life immunity to all forms of dental troubles is illustrated by the short curve in the middle of the picture in the decade 30-40. The special immunity to caries, carrying with it a special susceptibility to pyorrhea, in the later middle years is well brought out in the exceptional curve of the 40-50 decade. The caries of extreme old age is explainable by the great shift over to the acid side of the curves in the 60-70 and the 70-80 decades.

So far, then, as we have gone, we see that there is evidence of a definite correlation of dental troubles to salivary reaction, when we realize exactly what it is necessary to find to demonstrate this and the factors that it is essential to eliminate from our findings before this comparison can be made. Let us just consider this a moment more before we pass on to the question of just how these changes in salivary reaction bring about the changed dental conditions.

I have explained that one must not be surprised to find, as the result of a single estimation of salivary reaction, a suspicious saliva, for the age group, unassociated with caries, or a reaction above suspicion together with carious cavities, in that the presence of a cavity does not in any way demonstrate that the present conditions are such that decalcification of enamel is at that moment taking place. In the same way the presence of the clinical signs of pyorrhea, the pocket formation and the alveolar destruction, are not

evidence that the conditions favorable for their original formation exist at the time of examination. These may simply represent the result of past metabolic faults, which have long since been rectified, but which, having once been brought about, will persist for all time. The estimation that has been undertaken will demonstrate only the state of metabolism at the moment of the experiment. From it conclusions may be drawn provided that all the circumstances are known and accounted for.

The state of metabolism at the moment may not represent the normal for that individual. All sorts of circumstances must be considered in working out a prognosis. It is impossible in the space that I am allowed in this article to go fully into all the details that will need consideration. For these I must refer the reader to my book *Dental Medicine*. I will, however, mention a few of the more important from the present point of view.

PURELY PHYSIOLOGICAL PHENOMENA

The state of digestion at the time of the examination may have a temporary effect on the reaction of the saliva, in that there occurs as a result of the secretion of the digestive juices a tide first of alkalosis and later of acidosis, which are purely physiological. It will be remembered that gastric digestion is in an acid medium, whereas duodenal digestion is alkalin. In the formation and secretion of these fluids there will come about changes in the acid base balance of the blood consequent upon the necessity of separating out the necessary products of the secretions from the salts in the blood. For instance, in the formation of hydrochloric acid from sodium chlorid, as the acid ion passes into the stomach the sodium ion remains in the blood, and this being alkalin it upsets for a time the balance between acid and alkali in that medium, giving a preponderance of alkali, the result of which will be a tendency to an alkalosis, which will be reflected in the reaction of the saliva, turning this over to the alkalin side. As a direct result of pancreatic secretion, this state is reversed and an acid tide replaces the alkalin, and the salivary reaction tends to pass to the acid side. Care must therefore be taken in estimating the reaction of the saliva at any particular moment that these perfectly physiological phenomena are not giving a false impression.

A DIGRESSION

To digress for one moment, it is important to realize that the secretion of gastric juice leads to an alkalosis, for in cases of a hypersecretion the discomfort from which the patient suffers is usually referred to as acidity, this being the symptom to which his discomfort is related, but in reality, as far as the biochemical aspect is concerned, the blood reaction tends to become excessively alkalin, and the biochemical reactions are those of an alkalosis and not of an acidosis. The reasons for this are plain if we recollect that the interior of the stomach is in reality not inside but biochemically and embryologically outside the body.

Emotional disturbances, as we have seen, have their effect on salivary reac-

tion, changing this over to the alkalin side, and must be allowed for in dental estimations. Apprehensions, fear and pain will all be mirrored in the resulting pH of this secretion, a matter that is important when the estimations are a part of a visit for conservative dentistry.

Such a state as menstruation will also, I believe, change the reaction from that which is normal for the individual in other circumstances again in the direction of increased alkalinity.

And, finally, for reasons that will be discussed in a subsequent article, the type of food that is being metabolized at the time has its effects.

This leaves us to consider how changes in salivary reaction, the result of alterations in the acid base balance of the blood, act in producing changes in the teeth.

Dental Caries

Dealing first with dental caries, it would be a simple matter to visualize enamel decalcification as the result of an acid saliva if the general acidity was such that a direct solution of lime salts was probable. This, however, can but rarely be the case; at any rate, not sufficiently commonly to account for the condition as it is usually seen in dental practice. But there are other methods by which this decalcification can be brought about than that of direct solution.

Pickerill has suggested an osmotic action, and Weston Price an electrolytic action that would bring about this result with a much less acidity than would be required for solution. The physics behind these phenomena I do not intend to go into at this time, but the same circumstances will be responsible for either, and both will depend directly on salivary reaction.

The Iso-Electric Point

At a certain point of reaction known as the iso-electric point, which is not of necessity the neutral point but which will differ according to the make-up of the individual saliva with reference to its protein content, the phenomena of both osmosis and electrolysis are at their lowest ebb. As the reaction passes to the acid side of this point, any passage of salts will be from tooth to saliva, and to the alkalin side from saliva to tooth. As a natural consequence of these changes, there will occur either a slow decalcification or a slow hypercalcification of dental enamel, irrespective of any question of vitality of that substance, which, provided that it is continuous, will eventually lead in the one case to complete enamel destruction and the formation of a cavity or, in the other to a condition of immunity to caries.

It is here that the question of exciting causes comes into the matter, for the presence of a plaque of fermenting food at some particular spot on the tooth surface will or may be sufficient in the changed local environment to produce this change from immunity to susceptibility to caries, but which in a more alkalin environment would be incapable of so doing. The reaction of the saliva becomes, therefore, a matter of extreme importance in caries prevention, even though the range of change may be small indeed.

Pyorrhea

The question of these changes and

their relation to the etiology of pyorrhea is not quite such a simple matter as in the case of dental caries. Although it will be obvious that a swing-over of the reaction of the saliva to the point of extreme alkalinity, such as we saw in Fig. 2, is a not uncommon circumstance in the decade 40-50, the period of life in which pyorrhea is most common, and will act in bringing about a special immunity to caries, in that circumstances will be particularly favorable to a hypercalcification of the enamel, this does not explain the condition. If we look, however, a little more deeply into the circumstances which are responsible for this change in salivary reaction, we shall find that they are favorable also for another phenomenon which accompanies the clinical condition which we designate, somewhat badly, pyorrhea, viz., the presence of the subgingival or serumal tartar.

This calculus by its very presence will act as an irritant to the gum margins and lay them open to infection by any micro-organisms that usually inhabit the mouth, the consequence of which infection will be the destruction of the alveolar borders and the formation of a pocket—in fact, all the clinical features on which we diagnose the condition.

The consideration of this matter in the necessarily limited space that I am allowed is hedged with difficulty, in that under the heading of pyorrhea different authorities mean such different conditions. I must make it plain, therefore, that I do not include in this diagnosis those cases of marginal gingivitis which are so common in dental practice, which are sometimes included in this category in which a deposit of subgingival tartar does not enter, which are not necessarily attended by an immunity to caries, and which may occur at any age. These I do not believe progress to the state of alveolar destruction and pocket formation, have a distinctly different etiology and therefore should not be deemed to be the same condition, though I have not the opportunity now to go into the matter of differential diagnosis.

It is possible that the increase in alkalinity of the saliva which will result from the compensation of a tendency to an alkalosis may be such that a deposit of subgingival tartar is facilitated, but I am inclined to believe that in reality this substance has an entirely different origin, suggested in the alternative name *serumal*, and that it originated directly from the blood. At any rate, it would seem that circumstances are particularly favorable for such a deposit in a state of alkalosis.

Calcium salts are present in the blood in a hypersaturated solution, held there by the colloids and the CO_2 that this tissue contains. If for any reason the amount of CO_2 is diminished, then of necessity some of this calcium must be deposited. We have seen that one of the causes of an alkalosis is the washing out from the blood of an additional quantity of this gas. In these circumstances, therefore, there will exist a tendency for the formation of this deposit in suitable places. Black points out that the subgingival spaces are kept constantly bathed in serum from that portion of the free gingivae which normally lies in contact with the enamel. Here, then, is just the position in which blood hypersaturated with

calcium salts owing to a diminution of its CO_2 content could so easily deposit its lime. This deposit having been formed, the other features of the condition will follow as a matter of course. We have in this visualization of the etiology of pyorrhea, using the term to cover only those cases which I have mentioned, a satisfactory explanation of all the concomitant facts, the age incidence of the disease, the antagonism between this and caries, the chronicity and the difficulty to find some special specific organism responsible for the condition. Further, it displaces the unsatisfactory theory of carbohydrate stagnation, which, if this is also the cause of caries, as we are so often informed, should in every case bring about both conditions at the same time, and even those who will not agree with me that the two conditions are essentially opposite and antagonistic in the etiology will not insist that they are usually or even commonly found together.

In concluding this article I would submit that, allowing for the difficulties presented by my small stage, I have been able to demonstrate that some fresh visualization is essential to explain the unexplained facts concerning the etiology of dental conditions as we see them from day to day, and that the biochemical presentation here given deserves consideration. At a later date I propose to go somewhat more fully into certain details of this presentation, which may remove some doubts and answer some obvious criticisms of these suggestions.

(To be continued)

Conserving the Teeth of the New York Police

By JOHN WALKER HARRINGTON, New York, N. Y.

Surveying and saving from 600,000 to 700,000 teeth of the law is the task of the newly established Dental Clinic of the Police Department of the City of New York.

So tooth-conscious is "the force," 18,000 strong, that it has donated the installation itself. Officially the clinic is the gift of the Patrolmen's Benevolent Association—the "P. B. A."—to which the rank and file of the blue-coat army belong. This initiative, so unusual in civic affairs, was due to a sustained campaign in oral hygiene in which many members of the profession of dentistry aided. Grover A. Whalen, Commissioner of Police, who has taken such an enthusiastic interest in the project, has been able to carry out the plan for the well-being of "The Finest" in more detail than did his predecessors.

The Dental Clinic is a unit of the newly reorganized Medical and Surgical Division of the Police Department, which is under the direction of the Chief Surgeon, Daniel J. Donovan, M.D. It is being operated as an important aid in maintaining the general health and efficiency of Gotham's guardians. Dr. Donovan, who joined the Medical and Surgical Corps of the Police Department thirty-five years

Waiting room of the newly established Dental Clinic of the Police Department of the City of New York.

ago, was one of the first in his calling to urge upon the police the value of proper teeth.

When Police Commissioner in 1895-1897, the late Colonel Theodore Roosevelt was a pioneer in odontology as well. He had been a Civil Service Commissioner before that and was a strong advocate of high mental and physical standards for public servants. He introduced the rule that every applicant for the blue and gold should have at least "ten grinders and twelve fronts." By a strange irony, as Dr. Donovan recalls, the first applicant who failed to meet these specifications was one recommended by the redoubtable Colonel himself. As a child "T. R." was inclined to rachitis, and the splendid bone and sinew and even the striking dental features which became so characteristic of him were due to careful diet and rigorous exercise and care.

Other commissioners with military training, such as Generals Frederick D. Grant, Francis V. Greene and Theodore A. Bingham and Colonel Rhinelander Waldo, developed the physical appearance of the force. The typical policeman became an alert, well-groomed, youngish person, who, in uniform or out, had an air of health and vitality. Richard E. Enright, a commissioner who had come up from the ranks, was an example of the new order. Although he had only an intelligent lay knowledge of the matter, he felt from experience that a good deal of the loss from illness in the Department could be traced to diseases of the teeth. Under his direction was prepared a booklet entitled *Healthy Teeth —Healthy Body,* much of the text for which was written by Dr. David Appel, who was appointed Honorary Dental Surgeon of the Department. The other authors were Patrick J. Murray, M.D., then Chief Surgeon, and Dr. Donovan, who was Deputy Chief Surgeon. Dentists who were of honorary rank, and who served not for cash but for kudos, aided in this movement. The pamphlet was printed on the Department press in the basement of the headquarters building, the type also being set by policemen. It had many illustrations, mostly drawings, both grave and gay, which were contributed by Sergeant James A. DeMilt.

With the coming of Mr. Whalen to the command of New York's Pretorian Guard the men instinctively paid greater heed to their personal appearance. He has been the chairman of the Mayor's Reception Committee for Distinguished Visitors for several years, and as such his trim figure and his engaging smile have often been photographed. When at the dedication of the Dental Clinic the president of the Patrolmen's Benevolent Association said that it was the ambition of every member of the force to have as fine teeth as the commissioner himself had, he expressed the attitude of a very large element. The interest of the police in dental excellence, however, is more than a cosmetic one. The majority have learned that many maladies which impair usefulness and make for much discomfort are directly traceable to tooth troubles.

The importance of sound teeth as related to physical well-being was stressed at the exercises with which the Clinic was formally opened. Among those who attended were John A. Hart-

well, M.D., President of the New York Academy of Medicine, and George A. Stewart, M.D., of the American College of Surgeons. Mr. Whalen presided at the luncheon held in the gymnasium, and Mayor James J. Walker made an address, as did several of the physicians present. Included in the four hundred guests were August Heckscher, the philanthropist, and Frank Phillips, who were the donors of the x-ray laboratories presented to the Medical and Surgical Division. Mr. Heckscher announced his intention of doing something to increase the number of dental clinics for children. The entire company, including a delegation of 250 from the Patrolmen's Association, made an inspection of the newly installed clinic.

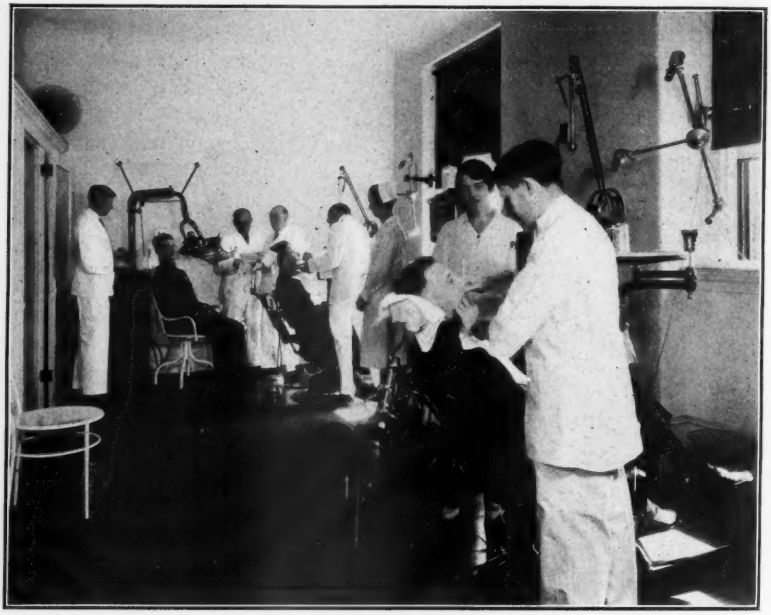
The examination room of the Dental Clinic is a model of spick-and-span cleanliness and sanitary excellence. The walls are painted white and the floors covered with heavy rubber tiling. As all the appliances stand on marble bases, the room can be scrubbed and hosed quickly and without any injury to equipment. There are two dental chairs of the latest model, each with a large cabinet of mahogany filled with numerous instruments and supplies resting on porcelain trays and readily removable for sterilization. Daylight streams into the room from four huge windows, but the sun is aided

A member of the Force giving official details about himself to the nurse in charge.

for mouth examinations by electric appliances for thorough illumination. A portable x-ray machine, with a long cable, is used for the two chairs. Adjoining is a special x-ray room for the study of the films, and the general x-ray laboratories of the Division also are available for the Dental Clinic.

Two dentists, approved by the Civil Service Commission, have been added to the Division personnel, as well as an oral hygienist. There are two women trained nurses, who were selected from the corps of policewomen because they had had a nursing education before joining the Department. They help with the patients and also look after the records. When a policeman arrives for his examination, he goes first to the reception room belonging to the clinic and there gives the official details concerning himself.

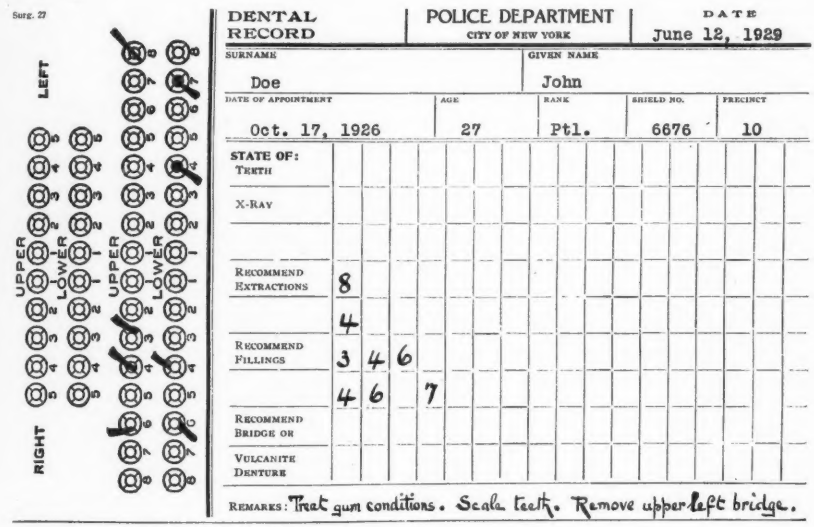
It will be a monumental task to gather the data for the survey of the police teeth. It is estimated that once the clinic is well under way it can examine 500 men a week, approximately 2,000 a month, which means nine months before the survey is complete. The main object of this research, as Dr. Donovan declares, is to check up on the state of the teeth of the men so that the information gained can be studied in connection with their physical conditions. The Medical and Surgical Division already has thousands of



The operating room of the Dental Clinic, Police Department of the City of New York.

records of the conditions of individuals which were compiled when they were admitted into the Department or when they were reported as ill and were examined by the official surgeons.

All dental records are being made in triplicate. One copy is placed at once in the folder of the person examined in the Medical and Surgical Division; the second is sent to the medical man in charge of the one of



Surg. 27

DENTAL RECORD | POLICE DEPARTMENT CITY OF NEW YORK | DATE June 12, 1929

SURNAME	GIVEN NAME			
Doe	John			
DATE OF APPOINTMENT	AGE	RANK	SHIELD NO.	PRECINCT
Oct. 17, 1926	27	Ptl.	6676	10

STATE OF: TEETH																														
X-RAY																														
RECOMMEND EXTRACTIONS	8																													
	4																													
RECOMMEND FILLINGS	3	4	6																											
	4	6		7																										
RECOMMEND BRIDGE OR																														
VULCANITE DENTURE																														

REMARKS: Treat gum conditions. Scale teeth. Remove upper left bridge.

the twenty-two surgical districts to which the policeman is assigned; the third is given to the man himself. The slip bears a report of the condition of the teeth, together with recommendations for treatment or for prosthetic aid. The patrolmen can have any work done by their individual dentists, such as fillings or plates or bridgework. The police clinic does not wish to interfere in any way with private practice. If the man examined has no dentist, he can have attention at the clinic upon the payment of a sum to cover the cost of materials, no charge being made for the services. Extractions and such quickly rendered services are free.

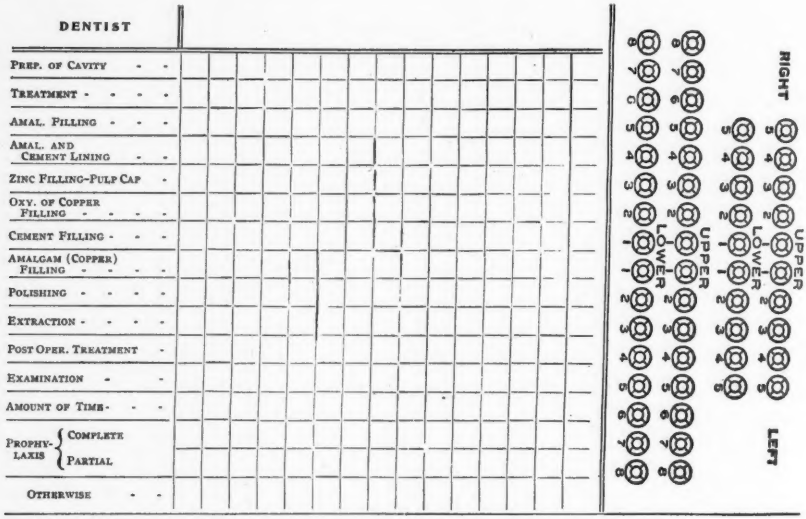
In the meantime, while the examinations are going on, the policemen may have their dental equipment attended to at their convenience and thus come to the examination with as good a showing as possible. At present the men who need attention most have the preference. They apply to their commanders at the various precincts and are sent down to the headquarters clinic in due course. Their dental appointments are thus made for them in advance. The surgeons in the districts, having received the reports of the examinations of policemen, are required to see that all dental defects are corrected as soon as possible. As the clinic develops, two examinations of the teeth

will be required of every man on the force. All are expected to show as presentable front teeth as possible, as personal neatness is considered highly desirable in the new order of things under the gilt dome of "H. Q."

Although the teeth of the younger policemen examined up to the present writing are in fair condition as a whole and some are exceptionally good, those of veterans of the force show in many

arranging to have new dentures and thus keep pace with the modern procession.

One of the best ways to evaluate the work of the Dental Clinic will, in the opinion of Dr. Donovan, appear as its records are added to the individual dossiers of the main division. When a policeman is reported as sick, for instance, he must be examined by one of the surgeons of the Department.



cases long neglect. The rookies just coming into the service have been pupils mostly of the New York public schools, and naturally they have had the benefits of toothbrush drills and of much practical instruction in mouth hygiene. Some of the men who go back for decades to the days when personal hand-to-hand encounters rather than bullet interchanges were more common than now bear the marks of battle on their fronts. These, however, are

If a patrolman, as shown by a study of the records, is often absent through the same kind of illness, the natural question is, "Why?" It is found that many cases of rheumatism, arthritis, neuralgia, and the like, which the old-time "cops" attributed to exposure to bad weather or chill, are really caused by defective teeth. The stomach trouble, indigestion, intestinal toxicity and other diseases which often incapacitate policemen may be due to pus from

abscessed gums. To the dentist of today these are the veritable ABC's of practice, but to the old-timers of the Police Department teeth were never held to be any factor whatsoever in the general health.

The number of men off duty on account of illness has been constantly decreasing since 1920 and at present is the lowest it has ever been. This is due to many factors, such as the greater attention being paid to hygiene in all its branches and the close follow-up systems of the chief surgeon. The readjustment of the activities of the Medical and Surgical Division and the more frequent physical examinations also count for much. It is a significant fact, however, that in the last seven years, in which the gospel of sound teeth has been preached to the police so zealously, there has been a marked decline in morbidity. It is expected that the new Dental Clinic will contribute in every way to the well-being of New York's "Finest."

220 West 42nd Street

[MORE DENTISTS NEEDED]

The crying need of dentistry today is more and better operators. Too many good operators have left that work to take up a specialty. Operative dentistry, if good, is preventive to a very large degree. The operator unskilled in gold-foil technic is missing that pleasure that comes with work well done. He is missing that fine training in manual dexterity so necessary to lift him above the ordinary and fill him with a new zeal and a joy before unknown.

—PRIME.

Nutrition

FOURTH ARTICLE

This is continuation of the summary of a series of lectures by Sherman L. Davis, Ph.D., delivered before a special class of the First District Dental Society, New York, during the week of May 6, 1929.

COMBATIVENESS IN CHILDREN

Some time ago the manager of a silver fox farm came to us in great distress because the mother foxes were eating their babies. They first became extremely nervous and ran about a great deal and then grew savage. We took some white rats, which are normally docile, and fed them an insufficient quantity of albumen, and in four or five weeks even these animals became savage. I have seen children turned against organized society so that nothing suited them by a deficient diet, while other children, properly fed, exhibited exactly opposite traits. As a result of wide experience and observation I am satisfied that combativeness is sometimes due to nutritional insufficiency, especially in the right kind of albumen and in the calcium content of foods. This does not mean that there must be a very high percentage of albumen in the food, because an animal will grow normally upon ten per cent of albumen in the diet, and that is all he needs.

ACCESSORY FOODS AND MINERAL SALTS

The greatest shortcoming in the average American diet is the insufficiency of the accessory food substances and the mineral salts. We see these shortcomings on every hand. The son of our groceryman about a year old suffered greatly from marasmus. The parents had tried everything, and nothing did any good. I suggested that they take a can of spinach, drain off the juice and feed the juice to the child. In six months he was a normally nourished child, whereas before that time he had been starving because of an insufficiency of mineral salts in his food. This condition in mild form is true of a great many of us, because an insufficiency of the accessory foods over a long period of time produces insidious, slow, persistent and profound changes in the vital organs. The accessory food substances are also known as vitamins. If any of them are left out of the diet in sufficient quantity to create a slight imbalance, the tissues over which these vitamins preside begin to change their morphological structure and cease to perform their specific functions and then the cells begin to be absorbed and connective tissue takes its place. Premature senility may result from the accumulation of scar tissue in this way in the place of tissue having specific and very important functions.

BLOOD-PRESSURE AND AGE

During the days that I have been here I have talked to several members of this audience, and one of them has told me that he has a low blood-pressure. He is interested in his blood composition. I should like to know what an abnormal blood-pressure is. Take my own case. My physician says

that at my age I should have a blood-pressure of about 140. My systolic blood-pressure is 121. From his point of view that is a low blood-pressure, and so I want to know the composition of my blood. Upon examination he finds that my hemoglobin is 90, which is normal, and that my red blood cells are about five million, which also is normal. No one who has lived a normal life and come to my age, 65, has any business to have a blood-pressure of 140. A pressure like that is a confession of a long-drawn-out abuse of the body from the standpoint of food. I believe that no one has any business to show either psychical or physical signs of senility before he is 75 years of age.

If you put six rats of the same stock in two feeding cages and give to those in one cage a diet which is in all respects good except that it is deficient in lime (and such a diet is common to many homes), those rats will not grow to normal size and some of them will be runts, the skin of all will be scabby, the hair will be coarse, and they will have none of the normal psychology of the rat. Give to the rats in the other cage the same diet except that it has plenty of lime and they will grow to normal size.

The white rat normally lives about three and a half years before he shows any signs of senility. After that he pays no attention to the ladies and is down and out. On a deficient diet the rats may grow big, but instead of being vigorous for three and a half years they will suddenly become old and decrepit. The children of such rats may be born with an inability to live and will be carried off by mild infectious diseases, apparently because there is a vicious imbalance of some sort. Senility and susceptibility of this sort are not matters of chance.

Premature senility is associated also with a form of psychology which is based upon subconscious beliefs. Many years ago people believed that they were going to live to be very old, and many of them did live to be very old. After a time people got the idea that they would begin to decline at about the age of 21, and they began to decline at about the age of 21. It is very easy to show that things to which we do not pay very much attention at the time may impress themselves so forcibly upon our subconscious structures that they will become effective perhaps twenty years afterward.

The influence of the mind upon bodily structures is shown by the story of a woman who came to the hospital to have an operation for tumor. When she was conscious, the tumor was readily visible and palpable and surgeons had no difficulty in making a definite diagnosis. When she was put under the anesthetic, the tumor disappeared. This recurred several times. It was a distinct illustration of a ruthless control of her physical body by something in the subconscious mind.

A great number of Americans have come to the conclusion that when they reach the age of sixty they have come to the age of senility, and they begin to run down hill physically and mentally about that time. This attitude and result are not at all necessary. When I tell my friends that I am going to do my best work at the age of seventy-five, they laugh at me, but I expect to show them that I am right.

All of us do not retain our normal sex vigor as long as we should, and this is a great tragedy. There are no better defenses of the health of the body than the secretions which the sex glands discharge into the general circulation. When people satisfy their energy requirements on sugars and similar foods and leave the vitamins out of the diet, the sex organs are slowly filled with minute growths that interfere with the development of the hormones which those glands supply to the circulation, and which I have just spoken of as unsurpassed in the defense of the body. I believe senility to be a result of a systematic accumulation of scar tissue, and this may result from the persistent use of such types of foods as interfere with the endocrin system.

For instance, if the activity of the thyroid gland is lessened, the hair falls out. If the activity of the gland is greatly reduced, the teeth will begin to decay rapidly and no amount of attention to diet will do any good unless the gland is brought back to something like normal activity.

The Dental Crisis

You are of course familiar with the dental crisis which occurs during adolescence. You know that you generally have much trouble with the teeth of children between the ages of 14 and 21, and that if you can bring the children up to the age of 25 with a good set of teeth, the probabilities are that those teeth will last for many years. Why does this crisis occur? There are doubtless many reasons. One of them may be that at one time during the evolution of the human race, when the hormones from the thyroid glands were carried by a duct directly to the sex glands and acted as an exciter of those glands and for sex desire, probably, the sex glands were stimulated to throw into the circulation a large quantity of protective hormones. With the progress of evolution this function of the thyroid and the direct conductivity of its hormones to the sex glands have been somewhat changed, but the evolution is not complete. During adolescence, when the sex glands ripen, the hormones are thrown directly into the circulation, and they may react upon the thyroid and cause a disturbance of it. The system must adjust itself to this condition, and the period of adjustment may be the period of dental crisis. Somewhat similar conditions probably occur in connection with the other endocrin glands.

The hormones from the thyroid have much to do with the nutrition of the teeth in some manner which we do not yet understand. The hormones from the parathyroid glands are also very important in enabling the body to build calcium into the bones and teeth. We studied the histories of 4,900 tuberculosis patients and found that at one time or another practically all of them had suffered from parathyroid deficiency and they had been unable to take care of calcium in their diets.

Drinking Lime-Laden Water

A woman in Georgia was very uneasy about drinking water which contained a good deal of lime, because she was afraid it would settle in her arteries. You cannot get lime into the arteries in that way. We took six men weighing 150 pounds each and gave them a

food supply containing 15 grains of calcium per day, the normal amount required for health. In addition, each was required to take 90 grains of calcium lactate daily. At the end of six days each man was carefully examined for calcium in the blood stream. Three had increased the amount of calcium by 1/10%, and three had decreased about 1/10%. You cannot raise the calcium content in the blood above normal unless you increase the amount of hormones from the parathyroid.

We do not know how to feed in any special way to benefit the parathyroids, but we know of some other things we can do. Professor Bovie kept a group of chickens in a greenhouse where the sunlight had to pass through a glass made with sodium and calcium. Half of the group were taken out into uninterrupted strong sunlight for thirty minutes each day; the others were not. Those taken out into the sunlight developed normally in every way. Those not taken out into the sunlight had diseased parathyroids, and only two of them came to sexual maturity. They laid only a few eggs, and the chicks in those eggs were too weak to pick their way out of the shells.

The skin of the human body is a protective membrane and under it is an alcohol, cholesterol. From the action of the short ultra-violet rays in direct uninterrupted sunlight upon this alcohol Vitamin D is probably manufactured, and this makes possible the polymerization of calcium in bones. Children who receive plenty of direct sunlight never develop rickets or diseased parathyroids and probably will not develop tuberculosis. I believe tuberculosis to be communicable, and that it is a manifestation of a long continued insufficiency of calcium in the diet and of sunlight. We live behind sodium-calcium glass during many months, and we do not get the benefit of the short ultra-violet rays in the sunlight. The producers and refiners of many of our foods are changing them greatly in such way as to render them insufficient in calcium, sodium, potassium, vitamins and fats. To this deficiency is added also a deficiency of the short ultra-violet rays on the skin through a considerable portion of the year at this latitude.

TWO GREAT CLASSES OF FOOD

From our point of view foods may be divided into two great classes, storage foods and biologically active foods.

Storage foods are those in which the material there accumulated has for its most pronounced nutritional effects the production of energy. Such foods do not contribute much to the nutrition of the living cells of the body. Muscle meats are storage foods. They do not necessarily build blood, and any one who thinks he can live indefinitely upon them is mistaken. Cereal grains are storage foods; they were made to produce another grain and not to feed us. Legumes, such as peas and beans, and practically all of the root crops, such as potatoes, are storage foods, and they are deficient in important elements of nutrition because their chief purpose is to develop energy. The wheat germ will not germinate unless the enzyme which it contains becomes active and completely changes the character of the wheat kernel. We expect our children to live upon wheat when the enzyme is not active.

In Mississippi, where the teeth of the children are carefully inspected by hygienists and dentists, we find that the children in the low lands, where the soil is rich and the people live much upon cereal grain and cane sugar, have distressingly bad teeth. The children in the hill country, where the soil is not so rich and the people eat more of the other farm products such as fruits and vegetables and the products of the herds, the teeth are much better. The grains are largely energy-producers and are deficient in the elements necessary for bone nutrition. This deficiency not only affects the bones, but is a cause of premature senility.

The biologically active foods are found in the working parts of animals and plants. They are more valuable as foods, on the average, than the storage foods, because they contain the accessory food factors. I can illustrate the value of the working parts of animals by saying that the kidney, which is one of the most actively working organs in the body, is the best albumen known. A pound of it has more nutritive value in albumen than a pound of anything else. In the plants the biological activity appears to be found mostly in the green leaves, which the grocer usually throws away, as in lettuce and cabbage. The inner white portion is valuable only for roughage. A diet which is deficient in biologically active foods will produce skeletal deficiencies and may cause animals to be runts. Recently, when I was away from home on a lecture trip, I was given exactly such a diet in a restaurant for seven continuous days.

During the time I have been here I have seen a number of patients, especially children. More than 80% of the children who came to one office are suffering from secondary anemia. At least 75% of the cases where the children have delayed dentition or rapid dental caries have this form of anemia, because they have been fed too much on storage foods, and these are not sufficient for the production of the blood plasma. Such children may be anemic because they are fed upon storage foods and do not get the 20 mg. of iron necessary daily. We have tried to treat animals with anemia by giving them iron, but it does no good. If to such a diet, however, we add 1/100 grain of copper and the same of manganese, we get red blood corpuscles and hemoglobin at a rapid rate. This is especially true when the iron mixture is reinforced with pyrrol compound found in lettuce, spinach, alfalfa, etc.

(*To be continued*)

Sociability Among Dentists*

By DAVID TABAK, D.D.S., Brooklyn, N. Y.

I distinguish three successive stages in ordinary human relationship: friendliness, sociableness and friendship. One can be friendly without being a friend. One can even be a friend without being sociable, but a person cannot be sociable for long unless he identifies himself in some measure with those factors that make for friendship.

Friendliness, to push the differentiation further, is merely sociability in staccato. It is quick and cold like the gleam of the firefly, while sociability is but a mask and a snare unless, like friendship, it is characterized by sincerity and is based on self-revelation.

How, now, do these general truths apply to dentists? It is a notorious and melancholy fact that dentists are not sociable. Bring dentists together and the most you can find is but a thin veneer of friendliness. The reasons for this are not far to seek.

More than anything else, sociability requires frankness and a sense of equality. Do these things exist among dentists? Before the world at large we are all equally Doctors of Dental Surgery, and this is about where our equality ends. We are not all equally successful. We are not all equally skillful. We have not all been in practice the same length of time. The one who does not "do" so well is envious of or timid before the one who "does" well or better. The one who does well or better is silently or openly contemptuous of his less fortunate colleague. The one who has been long in practice either makes short shrift with or graciously condescends to meet the younger man.

Moreover, due to its rapid strides, dentistry is running away from the dentist. Very few of us can keep pace with it. And, if there already is such a thing as *perfect dentistry*, it has not yet trickled down to the rank and file. The average dentist is painfully conscious of his limitations, which he is trying hard to cover, not only before his patients but also before his fellow dentists.

There seems to be a convergence of influences emanating from, in and out of college, tending to produce in the mind of the recent graduate peculiar notions—notions that later become responsible for much of his suffering and his lack of sincerity. Such notions are that a dentist must at all times turn out nothing but perfect and beautiful work, that a dentist has the touch of Midas for turning everything into easy money. Failing in both, as he inevitably must, he is left with the fear and obsession that perhaps the other fellow succeeds in doing what he himself has failed in. For does not this other fellow talk with such swagger as if he were riding on top of the world? He does. But are they not all equally dentists? They are. So he decides, as a matter of self-preservation, to bluff his way into equality of attainment. Hence you see that when dentists meet in groups they usually lie

*Read before the Williamsburg Economic Chapter of the Kings County Dental Society, Brooklyn, N. Y., May 22, 1929.

on all fronts. They lie about their work; they lie about their clientele; they lie about their income, despite the fact that each one knows the other is lying. Each fears to admit that his is a small following or that his is a poor income lest he draw upon himself pitying or belittling glances.

In such an atmosphere of childish cunning and transparent deceit no sociability ever can flourish. We must reshuffle our cards and re-evaluate our conceptions regarding character and essential virtues, which alone make life clean and interesting. We must remember that with a modest income a man may be as lovely a person as one would ever wish to meet. Conversely, the man whose income is large may be quite repulsive and stand much lower in the scale of civilization.

Generally dentistry is still emerging from a raw state into a highly skilled and specialized profession. At the present time we, its priests and sponsors, are still in the throes of its birth and still suffer labor pains. Dentistry is new. We have yet no martyrs, no consecrated ground, no tradition, no well-defined, deeply ingrained mode of conduct to govern our professional life.

Thus the best of us are still very far from perfection. We all try to do what seems to us to be the right thing. But we all make mistakes, for we are all human. So let us be tolerant.

This is a plea for sanity—a plea for a return of old-fashioned, simple honesty as a means for genuine sociability. Let us stop "high-hatting" each other. Let us be frank. Let us stop belittling the other fellow and his work. In short, let us be *sociable*.

178 Grand Street Extension

Two Studies of Aciduric Organisms

By T. MORISHITA

COMPARATIVE STUDY OF CERTAIN ACIDURIC ORGANISMS OF INTESTINAL AND DENTAL ORIGIN

Unfortunately the intestinal organism, B. Acidophilus, has recently been confused with somewhat similar organisms which are associated with and may bear some relation to dental caries.

This paper presents a certain phase of the experimental work which has been conducted on more than 100 strains of acid-forming organisms isolated from dental caries, together with some known strains of B. Acidophilus of intestinal origin. The results may be summarized as follows:

The occurrence of B. Acidophilus of the intestinal type in dental caries is relatively rare compared with the other aciduric organisms found and may be regarded as merely adventitious.

Morphologically the common aciduric tooth organisms appear as short, small rods, occurring in chains, as compared with the larger and longer rods of B. Acidophilus which under the given conditions tended to grow in long chains or threads.

Colony formation of the two types is markedly different. The tooth organisms form solid, smooth, rather large colonies, while B. Acidophilus has a tendency to produce the fuzzy or X type of colonies, though at times the so-called Y type is quite apparent. The stroke plate method and the plating of the organisms in low dilutions will as a rule also show pronounced differences. Furthermore, the tooth organisms produce general turbidity in broth-culture, while with B. Acidophilus the supernatant broth usually appears clear, along with distinct sedimentation in the bottom of the tube.

In sugar broth there is much greater acid production by the tooth organisms than by B. Acidophilus, the former attaining a final pH of 3.8-3.0 and the other 4.4-3.8.

The tooth organisms were able to grow at temperatures as low as 12°-14°C., while B. Acidophilus failed to do so even at 18°C. This suggests perhaps one of the most important means of separating these two types.

Both of the representative tooth strains belonging to this group coagulated milk and produced acid from mannose, trehalose, melezitose, mannite, sorbitol, and salicin.

B. Acidophilus fermented raffinose and sucrose.

The tooth organisms discussed here constitute a type entirely separate from B. Acidophilus of the intestinal tract. —*Proc. Soc. Exp. Biol. and Med.*, May, 1928.

FURTHER STUDIES ON CERTAIN ACIDURIC ORGANISMS OF DENTAL AND SALIVARY ORIGIN

In a previous paper the author briefly discussed one of the several types of apparently distinct aciduric organisms found in dental caries and

in the saliva of persons having carious teeth.

The present report deals with a second distinct group or type from the same source. This organism is Gram-positive, occurs in rather slender rods, singly or in chains, and tends to form palisade-like groupings. All agar colonies are solid. The different strains do not as a rule coagulate milk; freshly isolated strains may rarely curdle milk, but later lose this property. Raffinose and sucrose are fermented. There is no action on trehalose, melezitose, dextrin, sorbitol, mannitol and salicin.

Group II may be distinguished from L. Acidophilus (Moro) as follows: by their action in milk; by fermentation of mannose, trehalose, dextrin and salicin; by their relative sensitiveness to chemical reactions of media; by growth at lower temperatures. Differences in morphological and cultural characteristics were also found to be of value in differentiation.

Forty-two out of 105 strains fall into the group reported in the author's previous paper. Scattered representatives of a few other groups are also found among the remaining strains.

Not more than seven of the 105 isolations bear a close resemblance to L. Acidophilus (Moro). The more infrequent types are perhaps more or less transient and from the standpoint of possible relationship to dental caries are of little or no real significance.—*Journal of Bacteriology,* January, 1929.

[REFINED FOODS]

It is not to be denied that our present-day foodstuffs have been refined and, in their preparation for our tables, made most agreeably palatable, but in this refining process it is denied that elements have been abstracted that have resulted in any inferior degree of calcification of the enamel. Under almost any condition of feeding during childhood enough material is available with which to build or produce adequate enamel.

—McKay.

DIGESTS

ANHIDROSIS ASSOCIATED WITH ANADONTIA

By Elmer Roberts, Ph.D.

Several years ago Thadani reported a toothless condition among men in a certain community in India. In addition to this they were bald.

Recently the author was able to trace these same characteristics for six generations in one family. The abnormal individuals had an entire absence of teeth or, in certain cases, only a few that were abnormal in shape and soft. There was an inability to sweat, and the hair was fine and scanty. X-rays revealed the lack of rudimentary or undeveloped teeth. Fingerprints did not disclose any "sweat pores." These three structures, teeth, sweat glands and hair, have their origin in the ectoderm. The nails, however, were normal. The proportion of abnormal males was nine out of fifteen.—*The Journal of the American Medical Association,* July 27, 1929.

DENTAL FOCI OF INFECTION

By E. A. Thomas, D.D.S.

The author cites the various fads that have prevailed in the medical profession for the cure of epilepsy and insanity and shows the futility of each. He then turns to the dental side of the question, which has been prominently stressed by certain men.

He cites the findings of Kopeloff and Kirby of the New York State Psychiatrist Institution, who made a test in a series of cases. They found that there was no higher percentage of improvement or recovery among those who had the foci of infection removed than in those who did not.

In every patient who recovered the recovery had been forecast before the treatment was begun. Only in one case did an unexpected improvement occur. The methods advocated by Cotton for establishing focal infection were found to be unsatisfactory.

Focal infection, of course, should be eliminated, but it is not the etiologic factor in functional psychoses, and a spectacular result from the elimination of any one of the ordinary focal infections is very rare.—*The Journal of the American Dental Association,* August, 1929.

THE ETIOLOGY OF DENTAL CARIES

By Harold J. Noyes, B.S., D.D.S.

Although caries has been recognized for over two thousand years, the cause is still unknown. Certain men have acted on the premise that it is a specific disease, and these men have contributed more to the general store of knowledge. It is generally believed that certain organisms are connected with the lesions, but only one investigator (Bunting) has applied Koch's postu-

lates to the organisms under investigation. These tests must be applied to each organism. It will probably be shown that more than one organism is concerned in the production of carious lesions.

Among the contributory or secondary factors are the condition of the saliva, the diet, internal gland secretion, heredity, tooth structure and general causative conditions. The secondary conditions are very important and any one of them may be sufficient to cause the disease. However, no one factor is all-important, and this may explain the diversity of opinion and evidence that has been reported. Further careful, intelligent and unbiased study is necessary.—*The Dental Cosmos,* August, 1929.

ON THE IMPORTANCE OF TASTE

By H. P. Pickerill, C.B.E., M.D., M.S., M.D.S., L.D.S.

The sensation of taste is due to the stimulation of nerve-endings in the tongue. The most important of these are derived from the glosso-pharyngeal nerve. The principal function of all sensory nerves is the protection of the organism, and the sensation of taste does not simply provide pleasure but also protects the mouth and stomach.

By the stimulation of the taste nerves there is a reflex action on the salivary and alimentary secretions, and without this stimulation digestion is only one-fifth of what it should be. The author has brought about complete gastric stagnation in a sheep by dividing the glosso-pharyngeal nerve. The stomach dilated and the food remained in the stomach undigested. It fermented and decomposed, and death followed from sapremia.

Diminished taste perception can be brought about clinically in two ways: (1) by a continued diet of a non-stimulating character, and (2) by forming a coating on the tongue, which protects the nerve-endings from stimulation.

Persons vary in their taste sensibility, and a coated tongue is promoted by a scanty viscous saliva following a previous irritation of the mouth by the excessive use of alcohol, tobacco, sugar, etc.

Consequently a vicious circle is established. Diminished taste produces oral stagnation, which in turn produces gastric and intestinal sepsis, thus giving rise to toxins, which still further diminish taste perception.—*The Dental Science Journal of Australia,* July, 1929.

Foreign Dental Literature

Edited by JOHN JACOB POSNER, LL.B., D.D.S., New York, N. Y.

DANGERS OF LOCAL ANESTHESIA IN DENTISTRY

By DR. OLAF REISKY, Trebnitz, Silesia, Germany

Experience has shown that danger may accompany methods of anesthesia due to personal peculiarities of the patient, the anesthetic employed, bacteria, mistakes of the doctor, or other unfortunate accidents. There are, generally speaking, but few cases where a local anesthetic is contra-indicated. Care must be exercised in conditions of anemia, nephritis, diabetes, arteriosclerosis, heart disease, etc.

The anesthetic itself is important. Cocain is to be condemned because of its toxicity. We must always bear in mind that novocain, although seven times less toxic than cocain, is nevertheless a poison. It is advisable to vary the dosage according to the patient instead of giving everybody the same amount or strength of novocain. This depends upon the patient's condition.

A definite contra-indication to local anesthesia is found in cases of abscess with swelling, for in such situations it is impossible to inject without grave danger of infection. Injection into an infected area will drive the bacteria deeper into the healthy structures, thereby spreading infection. To be safe in infiltration, the point of insertion of the needle should not be painful to touch. Even conduction anesthesia may lead to complications if it is employed where severe infection is present. The dangerous inflammations involve the internal pterygoid muscle, which is difficult of access. Where trismus is present, a general anesthetic is preferred. For patients who have hysteria, and for children who are difficult to manage, a general anesthetic is better than a local anesthetic. Fischer reports cases in which the patient has collapsed through fear or hysteria before a drop of solution has been injected.

The instrumentarium should be carefully controlled. The needle, syringe and anesthetic solutions must be absolutely sterile, as well as the hands of the operator and the field of operation. The mouth should be carefully sterilized with an antiseptic solution, and the point of insertion of the needle painted with iodin. Infection carried into the deeper structures may cause serious consequences and endanger the life of the patient.

The needle itself must be sterile. It is important that once the needle has been used it should be sterilized again before another insertion. Ampoules should be kept sterile, since there is contamination from the outer surface of the glass. A sharp needle is always to be used, since a dull one or one with a bent point will injure the nerve and tissues through which it passes.

It is particularly dangerous to inject lingually for mandibular molars. The needle may be forced into the lingual nerve or bruise it, which will result in a long-continued anesthesia of the side

of the tongue. Above all things, never carry the needle into the floor of the mouth, as an infection here may be fatal.

Injection into a blood-vessel is not very frequent. It is rather dangerous if the solution has not been sterile, or if the solution is too strong. It may cause the collapse of the patient, due to the sudden action of the novocain on the central organ.

Broken needles offer some of the dangers of anesthesia. In all cases be sure that the needle is not too short, for when it breaks it will quickly disappear. The syringe should be capable of easy sterilization.

Patients react differently to an injection of novocain. Some become hysterical, others exhibit toxic symptoms. The suprarenin must be held accountable in a large measure. An excess of suprarenin should be avoided. When suprarenin is exposed to the light, it is oxidized and becomes much more toxic in its action. It causes increased heart knocks and raises the blood-pressure. Remember this fact while dealing with patients who already have these conditions. The patient should quickly be placed in a horizontal position.

Disastrous results have followed the careless taking into the syringe of alcohol, phenol and other drugs in mistake for novocain. In one instance death resulted when the pharmacist made up an anesthetic solution of 2% novocain and 2% suprarenin.

The two most common conditions in connection with the injection of an anesthetic are after-pain and hemorrhage. After-pain can be minimized by a careful observance of the true technic of local anesthesia and especially sterilization. Hemorrhage is best controlled through pressure.

Summary

(1) Local anesthesia is contra-indicated in severe swellings, abscesses, trismus, hysteria. Care is to be exercised in patients with a weak heart.

(2) Infection through insufficient asepsis.

(*a*) Hands.
(*b*) Needle, syringe, ampoule.
(*c*) Solution.
(*d*) Mouth.

(3) Infection through injection into inflamed areas.

(4) Injury through dull or ragged needles.

(5) Broken needles.

(6) Poor technic.

(7) Idiosyncrasy.

(8) Injection into a blood-vessel.

(9) Harmful solution, too strong, infected, wrong contents.

(10) After-pain.

(11) Hemorrhage. — *Correspondenzblatt für Zahnärzte,* May, 1929.

OSTEOMA NOT CLINICALLY ESTABLISHED AS CAUSE OF DIFFICULT TOOTH EXTRACTION

By Dr. Josef Jarzab, Lwów, Poland

The author points out a density of bone structure not heretofore described as a cause of difficulty in tooth extraction. This hardness of bone makes it unyielding and prevents the loosening or turning of the tooth. Three cases described show a hardening of the bone which was strongly analogous microscopically to a spongy osteoma. It may

be explained in two ways: (1) either the new bone has the form of an osteoma, or (2) the excess of bone cells is formed as a result of long-continued irritation.

Since true osteoma seldom occurs and appears mostly in middle age as a result of heredity and aimlessly increases because of the potential energy of the cell, the cases described show on the contrary an abnormal bone growth after extraction, which leads to the conclusion that this is the irritating cause of the pathologically changed bone structure.

In a similar manner difficult extraction may be explained in isolated teeth after the extraction of neighboring teeth, for the abnormal bone structure and thickening are a result of the irritation caused by the loss of these adjacent teeth. The difficulty encountered in the extraction of such teeth is best overcome through the use of mallet and chisel.—*Polish Dental Journal,* May, 1929.

REMARKABLE WEAR OF THE INCISORS AMONG THE CHINESE

By PROF. BAU KIEN-TSING, Peking, China

A very interesting condition among the Chinese is the well-worn edges of the incisor teeth, both maxillary and mandibular. The reason for this strange appearance is of interest to Europeans, for no other nation has the custom of cracking the almost unbreakable seeds of watermelon and pumpkin between the front teeth! The Japanese take up this habit when they have been in China for a while.

The Chinese have gained such skill in nut-cracking that they can crack, remove the kernel with the tongue and cast off the shell at the rate of thirty a minute. This unusual habit begins in childhood and is hardly ever broken. When you enter a Chinese restaurant or tea room, the first thing the waiter places on the table is a tray of these seeds roasted and salted. It is not uncommon to see people busily engaged in conversation and constantly cracking open these seeds between words. This habit explains the severe abrasion on the anterior teeth of the Chinese, and an examination of more than 500 persons showed that more than fifty per cent had this condition.—*Deutsche Zahnärztliche Wochenschrift,* July, 1929.

NITROUS OXID ANESTHESIA

By DR. HAUKE, Breslau, Silesia, Germany

In recent years the Mayo Clinic in the United States has done an increasing number of operations under nitrous oxid. In Europe this method of anesthesia is used but little. The author has been employing nitrous oxid in the surgical section of the Breslau Hospital for the past year and with such good results that it is now used almost exclusively. Sufficient oxygen is used with the combination so that cyanosis is practically avoided. Ten to 15 per cent is necessary, but more than 20 per cent must be avoided, as it interferes with the proper narcosis. The patient may be kept under for several hours with no ill effects.

Some operators prefer to administer straight nitrous oxid, but our experi-

ence has been that best results are obtained when oxygen is added to the mixture of the gases. The anesthetic action is not impaired and safety is greatly increased.

There is no question, however, that for the general practitioner of dentistry local anesthesia is the method of choice, owing to its absolute safety and to the fact that it does not require an expensive apparatus.—*Deutsche Zahnärztliche Wochenschrift,* July, 1929.

[NEED FOR RESEARCH]

What we need in dentistry is a different method of attack on disease, an attack backed by resources outside our societies and directed by whole-time research workers with a program of years ahead of them and their future made secure by adequate endowments, so that they may work unhampered by the haunting dread of losing their position through the ever-present exigencies of our modern life. We shall never reach the ultimate of our possibilities in the way of research or education till the same kind of help is meted out to our profession that is so generously and appropriately dispensed to medicine; and the attention of our great foundations should be called to this fact on every occasion and through every medium. Surely dentistry has done enough for mankind, even with all its handicaps, to entitle it to consideration as an integral part of the great health movements of the day, and, as soon as our philanthropists are made thoroughly familiar with the facts, there is no question that adequate aid for research will come to it.

—JOHNSON.

DENTAL ECONOMICS

Investments for Dentists

By WALTER S. KYES, D.D.S., San Diego, California

FIFTH ARTICLE

We read a great deal nowadays about the methods of capitalization and of financing corporations which leads us to believe that certain corporations are more and more being controlled by an inside group which might become, in the course of events, not particularly interested in the welfare of the small investor who puts in his money as a stockholder.

There seems to be a tendency upon the part of boards of directors and others in control to run the whole show as they deem fit. To illustrate—some time ago a public service corporation was said to have issued a small amount of common stock and to have vested therein the voting rights of the entire stock issues, which ran into the millions, and which represented investments in some twenty cities about the country. By this method they took away the voting right of the stockholder and placed the control of this public service and quite largely publicly owned corporation in the hands of an inside group. Such a procedure placed the small stockholder in the position of a person who has loaned the company money at a given per cent, taken a receipt in the form of a preferred stock certificate and relinquished claim to any further participation in the affairs of the company.

Another instance has been quoted wherein a group of financiers purchased a company for a stated number of millions. They are said to have issued bonds and stocks forthwith against the plant for eighteen million dollars or so—more than the purchase price—and sold the bonds and stocks to the public. Not content with this, the organization has been credited with having issued a rather small amount of common stock, vested the common stock with the entire voting right, and held it in the treasury, controlled, presumably, by the board of directors. This is cited merely as a rather new and effective form of close monopoly in finance. It is criticized by economists as a rather dangerous procedure, in view of the fact that it takes away from the stockholder any voice in the affairs of the company, depriving him of the right to vote even by proxy, and a group once in control of a corporation may always stay in control, no matter what their ambitions may be, whether for public good or for personal gain. Of course this close control would be unobjectionable if those in control owned the stock, but where it is largely owned by small investors the method has been seriously questioned, and for obvious reasons.

On the other hand, it is argued that

persons in control of present-day corporations have, with the passing of years, evolved into managers with finer consciences and higher aims than of old, that they are trained experts who can be trusted, and whose activities should not be interfered with by the whims of ordinary uninformed stockholders who have no knowledge of corporate management. However, the matter is still a subject of controversy among economists, the outcome of which remains to be seen. The subject is brought up here to call the attention of the prospective investor to a phase of modern finance and the apparently iron-clad inside control of the investor's money.

As has previously been stated, ownership of a share of stock in a company presumably entitles the holder to share in the profits of the concern issuing it and infrequently compels him to share in the losses of the company as well. On the other hand, a bond held by an investor against a concern is not only an acknowledgment of debt but a promise by the concern to pay to the holder of the bond its face value plus accrued interest on or before a given date.

The trading value of bonds is largely influenced by the profits of the company issuing them, therefore the price of bonds varies accordingly. However, if one buys a bond, say, for $100.00, which is to mature in ten or twenty years and holds it for the given time and the company is prosperous, one is reasonably sure, provided that the management of the company is what it should be, of cashing in the bond for its face value. Bonds are sold to the public for the reason that the company issuing them is in need of money. It is not infrequent for the issuing company to stipulate that after a given time it reserves the right to call the paper at a certain premium above its face value. This is made necessary because of the fact that rates of interest change. When money is tight, every one who borrows has to pay a higher rate than when money is plentiful, and it is not unusual for a concern to call in and cancel a bond bearing a high rate of interest and issue other paper at a lesser rate, which of course is a legitimate procedure.

It is a curious but an indubitable fact that distant horizons are too often the most alluring to the inexperienced investor who is looking about for a place to invest his savings. Of course this is as it should not be, because the various propositions offered in far-away localities do not afford opportunities for investigation, as do those close at home, and a proposition that is not amenable to close scrutiny is not worthy of consideration from the investor's standpoint. A good motto to paste on our windshield, even though it is a hackneyed one, would be, "Investigate Before You Invest."

Among those investments in bonds which the majority of us are doubly interested in, because we eventually have to raise the money to pay them, are such issues as bonds for municipal improvement, including waterworks, electric light plants, sewer installations, street improvements, and the like. Although the majority of us will testify that there is no way of avoiding the payment of levies for such purposes, such bonds should not be purchased for improvements outside one's

home town without first ascertaining their intrinsic value. Probably the best way to determine values aside from a searching investigation is by the rate of interest which these bond issues carry. It must be remembered that the higher the rate of interest on bonds or the higher the dividends guaranteed on stock issues, the greater is the risk, as a rule. This, of course, would not apply on bonds issued in instances of tight money, when every one in need of cash has to pay more of a premium for its use.

Short-term bonds, it appears to the writer, are preferable to long-term issues. This is due to the fact that in the course of, say, twenty or thirty years unforeseen things happen. Take, for instance, the stocks and bonds issued by certain street railway companies twenty years ago. At that time, when the companies issuing the securities were reasonably well managed, these were supposed to be good investments. Now the automobile has apparently supplanted street cars to such an extent that the latter companies in many instances are placed in trying circumstances. On the writer's desk is a press despatch stating that the street railway system of one of the largest cities on this continent has gone into the hands of a receiver. This means a tremendously costly court procedure, a reorganization plan, a stoppage of interest payments and of dividend payments on stock, and probably a new stock issue which may not pay dividends for years. All the time the holders of the stock and bonds will be expected to hold the sack patiently and, at intervals, their breath as well.

Another instance which no doubt represents a gigantic loss to stock- and bond-holders is the failure of one of our great transcontinental railway lines to meet its obligations. It may be that in neither instance were particular persons to blame, and, if they were, the blame may never be fixed. Yet the fact remains that the losses are evident and in many cases they are sustained by persons who can least afford to take the loss.

Just how such situations are threshed out is aptly set forth by one of the writer's correspondents, who speaks as one who has had experience. In part he says:

"Most of us know that if there is a first mortgage on our residence and we default in the interest payments, we will be turned out of the house, the house will be sold, and the mortgage paid off in cash, principal and interest —a real calamity for us. Now, the point I wish to make is this—most people think that a first mortgage on a large industrial concern is handled in exactly the same manner if the borrowing company defaults. Such is not the case, however. In the event of a default a receiver is appointed; also, a bond-holders' protective committee is formed. Several years pass and no interest is paid. The bonds have fallen to a small fraction of their original cost. No word can be obtained from any one as to what is being done, when the receivership will be terminated, or anything else. Finally the receivership is terminated, and what do the first mortgage bond-holders receive? Cash? Oh, no, not at all! They are given some shares of stock in the reorganized company or income bonds of almost no immediate market value, producing no income,

and no one knows when, if ever, they will be income-producers."

"Thus the difference between a first mortgage and some first mortgage bonds," he might have added.

812 Watts Building

"Every Knock Is a Boost"

By JAMES F. MITCHELL, D.D.S., Pawtucket, R. I.

I have read with interest the article in the July issue of THE DENTAL DIGEST entitled "A Great Discovery for the Dentist." It certainly proves the statement that a little knowledge is a dangerous thing.

The author proceeds to knock a *plan* of which he knows little. If he had taken the trouble to investigate, study the *plan* or sit in at one of the courses, he would not have made those statements. Five thousand dentists who have adopted this *plan* know that those statements are not facts. There is but one statement in the article to which I will agree, namely: this *plan* will not bring patients to the office where a practice is in its infancy. The *plan* does not claim to do this.

The article criticizes the dental salesman who would dare suggest that a dentist take this course in dental economics. Now, who is in a better position than the dental salesman to know when a dentist needs economic help? Nearly 20% of all dentists are on the C. O. D. list at their dental depots. Over 50% of the dentists take over 90 days to pay their dental supply bill, which was due in 30 days. Credit, in general, is extended to about 25% of the dentists. Seventy-five per cent of all the dentists in this country make less than $50.00 a week. Thaddeus P. Hyatt, writing on *Teeth and Health* in Harper's Magazine, states that the average income of dentists is about $2,500 a year. The dental salesmen are acquainted with these facts, and they know from hundreds of other cases that dentists who have adopted this *plan* have improved their incomes.

The article states that a *plan* will not create good times when there is a general depression. When this *plan* shows the dentist that he has a certain overhead per hour, whether times are good or bad, he certainly will not give away service, as he does, to patients who are well able to pay. In quiet times large cases do not come to the office. Most of our work consists of examinations, consultations, treatments, stopping toothache, abscesses, single fillings, extractions, prophylaxis, etc. The majority of dentists charge a fee that will not meet the cost of rendering these services and in many cases no fee at all. They are sitting back waiting for the big cases and forget that these small services, in quiet times, are their only source of income. Consider what Woolworth did with dimes.

The article states also that a *plan* will not collect from a patient of means who has been a prompt payer, but who

at present is tied up with investments, etc. If the dentist has an understanding with the patient in the beginning as to how the account will be paid, the *plan* surely will collect. Why should the dentist, who is worth far less financially and has a much smaller income than this patient of means, carry this load?

The article goes on to say that a *plan* will not create a pleasant and attractive personality in an individual who is by nature unable to make a proper impression, etc. The *plan* certainly will change a sour personality into a sweet one. Is it not a fact that the majority of dentists are sour on dentistry? They must be when 75% of them make less than $50.00 a week. When you teach them to render better service and collect a fee for it that will show a fair profit, they begin to increase their incomes and you can see the pleasant change taking place. The frown changes to a smile, and they are able to breathe with relief.

The *plan* does not state, as the article to which I refer would make one believe, that a dentist must not work nights. It does state, however, that the dentist who works nights is selling his patients a tired dentist and therefore not his best work. It states further that the dentist who is busy nights has little to do during the day; the people who could come days are going to him nights because his office is open. If a dentist would explain this to his patients, he could get 80% of them to come in the daytime. In these days of 44- and 48-hour weeks the factory, mill, store and office employees have finished their day by five o'clock. Teachers, bank employees, government clerks, carpenters, bricklayers, all tradesmen and laborers have finished their work from 3.30 to 4.30 in the afternoon. Housewives, night watchmen and other night workers have some part of the day when they could visit a dentist. Most workers have Saturday afternoon off. From this I certainly cannot see any necessity for a dentist working after six p. m., except in an emergency.

The *plan* is not applied exactly in the same way to every practice. Nothing but failure could result from this. The *plan* is applied to the individual practice and location. There is a personal survey of every individual and office. Surely the *plan* could not be applied exactly the same in an office with a $3,000 gross income and in one with a $15,000 gross income. Furthermore, while a layman founded this *plan* of dental economics, the subject is taught by successful practicing dentists or associate teachers who are highly ethical men, well acquainted with the problems of the profession.

Agreeing with the writer that a sad state of affairs exists in the dental profession, I ask—who brought it on? The dental colleges! It is about time that dental colleges taught economics and did not leave it to teachers outside the profession. The dental colleges have lengthened the course from three years to six years, trying to remedy the situation, but this makes the economic condition worse. Doubling the course of instruction naturally doubles the amount that the dentist has invested before he starts practice, and this vast sum is never returned to him. The colleges will tell you that they lengthened the course so that they could

attract a better type of man to study dentistry. The dentists now in practice, with few exceptions, are a fine body of men, honest, intelligent and charitable. The colleges certainly will have to attract a wealthier class of men to study dentistry today.

What is really needed is a better type of dental college, one that will teach the student not only how to practice good dentistry, but also how to make it provide for him and his family. The graduates of our dental colleges are well equipped to render good dental service, but the responsibility of the college does not end there. How is the young dentist going to put into practice the teaching received without being able to estimate the cost of such practice? The usual result is that for the first year or two work is done along the line of the teaching received at college. Financial returns are very disappointing. Working hours are lengthened in the hope of getting out of debt. Nervous vitality is squandered in the futile endeavor to catch up. Then the inevitable result — sourness, staleness, irritability—all reflected in the service rendered. How can dental ideals thrive in soil such as this?

Next, quantity takes the place of quality. Away go the principles of cavity preparation, marginal preparation, sterilization, lining, stepping, marginal trimming, carving and polishing. The fact that dental colleges do not teach economics is certainly the reason for the existence of the things I have just mentioned. I believe that the dental college is responsible for so many of our young men advertising dentistry. Most of these young men have tried to practice ethically, but for lack of sound dental economics they have failed.

If the way to successful application is not taught, what is the value of teaching all the sciences? If colleges of engineering taught engineering, drawing of plans and specifications without teaching the estimation of cost, what would be the result? It is unsound doctrine to teach that good dentistry can be done at any less than upon a profitable basis. The old statement, "Do good work; the fee will take care of itself," has proved a failure. How can the fee take care of itself? Patients do not pay any more than the dentists ask. The fees charged at the dental college infirmary are equal to those charged in a great many private practices. Patients at the college infirmary are told that they are paying for materials only. I believe that the college dental infirmary is making as much profit per student each year as the average dentist.

The *plan* to which the writer refers teaches a high class of ethics; the fact that it comes from a layman instead of a dental college does not lower the standard of ethics in the slightest degree. After all, ethics is nothing but the application of the Golden Rule: "Do unto others as you would have them do unto you." "Treat thy neighbor as thyself" does not mean that we should treat our neighbor better than ourselves. Dental ethics refers to the duties which a dentist owes to his profession, his fellow man and himself. In the past years the duties to *self* have been left out entirely, while the duties to our profession and our fellow man have been overstressed. It is wrong to charge exorbitant fees and thus deprive

people of good dentistry, yet it is just as wrong to deprive self and family by doing dentistry at a loss. To produce dental ethics, it is just as necessary to complete the formula of duties to self, profession and fellow man as it is to complete the formula H_2SO_4 to produce sulphuric acid. Leave out the hydrogen and the result is not sulphuric acid. Leave out the *self* and the result is not dental ethics.

A new book on dental economics has just been published entitled *The Business Side of Dentistry,* by Edwin Kent, D.M.D., Lecturer on Conduct of Practice, Harvard Dental School. It is a very fine book, and if Dr. Kent carries this teaching, with a practical application, to his students at the Dental School, he will be doing a very fine work. But he is going to reach the students of only one dental school. How about the thousands of dentists already in practice? It seems to me that the layman with his *plan* will have to continue to reach those outside the dental college. As far as I can read in Dr. Kent's book, there is not a practical idea brought out that has not been taught in this *plan* for years. The teaching in this book comes from within, though, and it will be praised throughout the profession—and justly so—because it is a fine work. But why condemn the economic teaching of this layman, because dental economics or the installation of a system or *plan* is just as foreign to the practice of dentistry as are the manufacture and installation of the dental equipment we use?

The simplest survey of a business and the installation of a set of books would cost more than three hundred dollars. Business firms have their business analyzed and their books audited every year and pay much more than this amount, but they know that it increases their profits and cuts down their overhead. This much discussed *plan* offers far more service than this, a service extending over a period of years, and what if the founder does make a profit on it? He is entitled to it, for he is rendering a real, honest service. He is in that business, and every business or profession must show a profit if it is to survive.

In his chapter on *Office Efficiency* Dr. Kent states: "We might conclude from these premises that it would pay the average dentist, considering his relative time value, to invest five hundred dollars a day for expert service that would lead to a comprehensive study and regulation of his operative procedure; and it is possible that, in many cases, such an investment would be profitable." I would take it, then, from this statement that Dr. Kent agrees that it would pay the average dentist to adopt this *plan.* It is certainly given by an expert at half the cost mentioned above and carries with it a thorough office survey by a successful ethical dentist and the installation of complete but simple records and books.

In concluding, I will say that I fail to see wherein a great knowledge of dentistry is necessary to teach dental economics or to install a *plan* whereby a dentist will know what he accomplishes. A dentist, after all, is selling service, and service is measured by time. The average dentist has but 1,000 hours of service to render each year. The overhead cost, as well as

the minimum hourly fee, must be based on that figure. The hourly fee is charged only as a minimum fee. I do not believe that a dentist should work by the hour, because some services require much skill and but little time, while other services require much time and but little skill. From this outline of the *plan* of economics why cannot a layman as well as a dentist be the teacher? I know that the *plan* will benefit the profession, the patient and the dentist.

179 Main Street

[WHY?]

We boast of the progress that has been made in dentistry, but do we realize what progress has been made in medicine? And how much of the progress in dentistry is really due to the progress in medicine? The term preventive dentistry has been criticized; perhaps the modern term contraceptive dentistry is more acceptable. Contraceptive dentistry is that which prevents dentistry. What right has dentistry to exist anyway? Is it not largely a makeshift? Why should there be devitalized teeth? Why should there be Vincent's infection?

—STOREY.

PRACTICAL HINTS

THIS DEPARTMENT IS NOW BEING CONDUCTED FROM THE OFFICE OF THE DENTAL DIGEST. TO AVOID UNNECESSARY DELAYS, HINTS, QUESTIONS AND ANSWERS SHOULD BE ADDRESSED TO EDITOR PRACTICAL HINTS, THE DENTAL DIGEST, 220 WEST 42D STREET, NEW YORK, N. Y.

NOTE—Mention of proprietary articles by name in the text pages of THE DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule.

Editor, Practical Hints:

Case 1.—A male patient, aged forty-five, has had his upper molar teeth on both sides extracted for over a year. Neither side has healed completely. The gum has closed excepting for a small place through which a probe can be inserted into the antrum on each side.

A rhinologist has cleared the condition on the worse side, but complete healing does not occur.

Would it do to remove the anterior teeth and construct a denture over these openings?

The x-rays reveal nothing.

Case 2.—Recently I supplied an upper second bicuspid for a beautiful young woman possessing an otherwise perfect mouth. I used an inlay in the first bicuspid and one in the molar, a facing and a cast pontic.

If the inlays are properly made, will the movement of the teeth eventually loosen them? Would you have used a compensating attachment?

F. J. R.

ANSWER.—Case 1.—If there is no infection in the antrum, the opening may at times be closed by freshening up the walls of the fistula, thus promoting healing. The making of a denture would do no harm, but the suction might be affected by air coming from the antrum through the fistula.

Case 2.—The bridge that you made for this patient should be entirely satisfactory. It would be well to adjust the articulation carefully not only for central occlusion, but also during the various excursions of the mandible.

Editor, Practical Hints:

Kindly inform me of a remedy for novocain dermatitis.

P. M.

ANSWER.—There seems to be no specific for novocain dermatitis. Many remedies are offered with varying degrees of success.

One is:

Zinc oxid	20 grains
Acid salicylic	20 "
Glycerite starch	2 ounces

Rub on the hands every time they are washed and at bedtime.

Another is:

Zinc oxid	8 grams
Calamine	4 "
Carbolic acid	2 "
Glycerin	4 c.c.
Water to make	250 "

To be applied as a lotion several times daily and at night before retiring.

Of course prevention is the thing to aim for, and a leak-proof syringe and the wearing of rubber gloves are of great aid. Care should also be used in expelling air from the syringe, as the spray is likely to do damage.

Editor, Practical Hints:

I have a case I am puzzled over. A lady, seventy-two years old, has spells of pus exuding from the gums, on the labial side, where the lips and cheek attach to the ridge. She complains that the denture just fills with pus many times a day and of course becomes offensive. She has used several kinds of mouth-wash; some help a little, but nothing permanently. The gums are not sore nor swollen. The x-ray does not disclose any roots. She has worn the denture about twenty-five years.

Can you tell from this description what the trouble is and give a remedy for it?

F. E. H.

ANSWER.—There are several possibilities in the case you present. There might be a sinus leading to the antrum, or the pus might come from Stensen's duct or even from the tonsils. It would be well to make a careful examination of the mucous membrane for a break in continuity. Of course no local treatment would have any effect on the cause.

Editor, Practical Hints:

Which makes the more accurate models for inlay work, copper or silver amalgam? Will you please give the consensus of opinion on this subject?

Is it safe to reuse copper amalgam, and is this procedure conducive to precise work?

R. A.

ANSWER.—Silver alloy makes the best dies, and there is a model alloy that is cheaper than that used for fillings. It is claimed that copper alloy can be used over again by the addition of mercury.

Editor, Practical Hints:

I have a patient, about forty-five years of age, who has lost all her teeth on the right side, both upper and lower. All are gone back of the cuspids. On the left side of the mouth all the teeth are in line and in almost perfect occlusion. She complains of a burning sensation all over the mouth. Would this be due to infection?

She has one lateral incisor pivot tooth. Would this be due to the condition left or caused by losing all her teeth on the one side?

J. J. T.

ANSWER.—The symptoms of your patient would seem to indicate that there is an infection somewhere, either in the oral cavity or in one of the sinuses. There may have been a direct injury to a nerve during a previous extraction. In the latter case, however,

the symptoms would probably be unilateral only. Sometimes a burning sensation is a symptom of anemia.

Editor, Practical Hints:

A lady in her ninth month of pregnancy came to my office for relief of pain. She had a lower first molar in which root-canal work had been done about eight years before. In all probability there was an abscess formation.

I could not relieve her from pain, as I was rather afraid to inject, nor did I give her any tablets to relieve the pain. What would you do in such a case?

Once I thought of opening the canal and letting the gas out, but in the first place I did not know whether or not the procedure would give her relief and in the second place, if I succeeded in entering the canal, the broach might slip beyond the apex and cause pain, which might frighten the patient and have some injurious effect upon the fetus.

T. M. T.

ANSWER.—In cases of this sort it is always advisable to consult with the attending physician and have him present if it is thought necessary.

It does not seem that an extraction would be any worse for the patient than suffering from an abscessed tooth.

Editor, Practical Hints:

In answer to the case report of E. C. M. in the July DENTAL DIGEST I wish to present my opinion from the facts published. Although it is impossible to form an accurate diagnosis of a case without studying the clinical signs directly upon the patient and checking the findings with radiography, yet certain thoughts come to my mind which I should like to express.

The patient had pain in the bone and gingival tissues for two years and a half, and partial anesthesia also exists. Further, the tissues are hypersensitive and are irritated by pressure, all of which points to a nerve involvement. Originally the pain started four months after the maxillary second bicuspid was removed and after healing had taken place.

Sometimes when sockets close over, some of the tiny nerve-endings become enmeshed in cicatricial tissue. This causes a pinching, if you please, of the nerve tissue and will create pain. Often, fortunately, the pain is temporary and subsides when granulation is complete. At other times it continues and will even create symptoms of a tic douloureux.

An effective treatment in these cases is scarification. Under a local anesthetic the area involved is subjected to a series of criss-cross cuts with a sharp lancet.

If no results are obtained by this method, then it is advisable to radiograph the part from various angles and compare it with similar radiographs taken on the opposite side of the jaw. If no pathology is evident, we should then resort to injections of alcohol as in a case of trifacial neuralgia.

S. J. BREGSTEIN, D.D.S.,
Periodontist of Unity Hospital,
Brooklyn, N. Y.

DENTAL SECRETARIES and ASSISTANTS

Secretaries' Questionnaire

All communications should be addressed to Elsie Pierce, care of THE DENTAL DIGEST, 220 West 42d Street, New York, N. Y.

NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR GREATER EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE PIERCE. YOU MAY HELP MANY GIRLS WHO ARE BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. PERHAPS YOU NEED HELP NOW. WRITE TO ELSIE PIERCE—SHE WILL HELP YOU.

Dear Miss Pierce:

I have been reading your articles in THE DENTAL DIGEST and have found them most entertaining. I should like your advice in regard to what school to attend for a course in dental nursing.

T. A. G., Meadville, Pa.

ANSWER.—We take it that you mean a course in dental hygiene. If you will get in touch with the dental departments of Temple University and the University of Pennsylvania at Philadelphia, they will give you the information you desire. There are no schools for dental assistants connected with these dental schools.

Dear Miss Pierce:

I should appreciate your printing something about the sharpening of instruments. The dentist with whom I am associated says that he attended a meeting at which some of the assistants were giving a demonstration on the proper way to sharpen instruments. I did not know that this was supposed to be the work of an assistant. If it is, I should like to know something about it.

L. S., Brooklyn, N. Y.

ANSWER.—We will answer your last statement first. Anything that the assistant can do to save the time of the dentist and to add to the efficiency of the office may be considered her work. While each office may vary in routine, we believe it is the aim of every conscientious dental practitioner to render the best service possible, and anything that will add to the effectiveness of that service and that can be taken care of by the assistant it should be her aim to accomplish. We will repeat what we have so often said, that is, that the scope of the work of the dental assistant is limited only by her intelligence and ability. A competent assistant can do all the work in a dental office save

that which is classed as operative procedure in the mouth.

Sharp dental instruments are a necessity. A dull instrument is very unsafe, even in the hands of a skilled operator. There is less discomfort to the patient if the instruments are sharp, and less physical and nervous strain on the dentist.

To learn how to sharpen instruments properly, one should have a practical demonstration, but we shall try to explain the procedure and materials used. When instruments are new, they have a definite bevel to their cutting edge, and this should be maintained when they are sharpened. All instruments should be braced and held tight with the bevel turned up and parallel to a block of hard wood, which can be fastened in a vise attached to the laboratory bench. A fine carborundum stone or a whetstone is then used to file the bevel in its original angle to the handle of the instrument. When the cutting edges are sharp, they are smoothed off by the light application of an Arkansas stone and finished off with No. 00 emery-paper. The fine art in instrument-sharpening is to be able to hold the instrument at the proper angle against the stone.

Dear Miss Pierce:

How many bones are there in the body? What are their names? I am employed in a country dental practice and the doctor has no book on anatomy in his office.

J. P., S. C.

Answer.—The skeleton or framework of the body consists of 206 bones, divided as follows:

In the head there are 28, to wit, in the cranium eight, in the face 14, and in the ears six.

In the trunk, not counting the arms or legs, there are 54 bones, of which 26 are in the spinal column.

In the arms there are 64 bones, of which 10 are in the arms and shoulders, 26 in the wrist and palm of hands, and 28 in the fingers.

In the legs there are 60 bones, of which 14 are in the ankles, 10 in the feet and 28 in the toes. The rest are in the thighs, knees and calves.

To give all the names of the bones of the body and explain their function would take more space than we can conveniently use in this department. You can get a copy of a book on anatomy from the library of the nearest town to you. One such as might be used in high school would give you all the information you want.

Dear Miss Pierce:

Please tell me the proper thing to do for a patient who faints or collapses from shock. We had a case in the office the other day when the doctor was out, and I was very much frightened, as I was alone in the office. It was a very warm day, and the patient had been up all night with an abscessed tooth. I certainly do not want to be caught that way again.

M. O., Pa.

Answer.—The first thing to do in a case such as you mention is to loosen the patient's clothing. If the patient is a man, remove his collar and tie and open the neckband of his shirt. If the patient slumps over in a chair, drag him to the floor and lay him flat on his

back, then go to the telephone and call the nearest doctor. While waiting for him to arrive, you can administer first aid treatment.

The case you mention might have been one of several things—fainting, shock or collapse, or heat exhaustion—each of which is different in symptoms and treatment. For simple fainting it is best to place the patient's head lower than the rest of the body, apply cold water to the face and head, and hold smelling salts or ammonia to the nose. Slapping the wrists with wet cold cloths will help, as will a hot-water bottle applied to the pit of the stomach.

For shock or collapse the head should be slightly raised and stimulants given if possible every ten minutes. Keep the body warm by application of hot-water bottles to feet and limbs and cover with warm coverings.

For heat exhaustion complete rest should be maintained and stimulation given gradually. Keep the patient cool but not cold, and try to maintain a normal temperature.

Now for the symptoms in such cases. In fainting the face is pale and clammy, the breathing is shallow and the pulse is weak and rapid. In shock or collapse the face is pale, respiration feeble, eyelids drooping, pupils dilated and eyes dull; the pulse is feeble and sometimes absent at the wrist; the skin may be cold and perhaps shivering. The whole body is cold and the shocked person is not totally unconscious. There may be nausea and vomiting, or hiccoughs. In heat exhaustion there may be dizziness at the beginning, coupled with nausea and vomiting. The patient becomes very weak, but not necessarily unconscious. The face may be pale and clammy or hot and flushed, and the pulse is weak and rapid.

We strongly advise you as well as every other dental assistant to take a course in first aid treatment. This is something which is of lasting benefit, whether or not you remain in a dental office. You never know when it may be the means of your saving a life, perhaps that of a person very dear to you. The American Red Cross has very fine courses of instruction, for which they charge a nominal fee.

Educational and Efficiency Society for Dental Assistants, First District, New York, Inc.

A regular meeting of the Educational and Efficiency Society for Dental Assistants, First District, New York, Inc., will take place at the Academy of Medicine, 2 East 103rd Street, New York, N. Y., on the evening of Tuesday, October 15, 1929, at eight o'clock. A very interesting program has been arranged and includes an address by a prominent member of the dental profession, a paper by an official of the Society, and reports of the annual meeting of the American Dental Assistants Association at Washington, D. C., October 7-10.

Following the usual procedure, the Society will again conduct classes on topics of value in dental assisting as

one of its chief activities. These study groups, free to members and held on one evening each week under the direction of competent instructors, will include classes in bookkeeping and accounting, chair assistance, sterilization, x-ray assistance, laboratory technic, telephone courtesy, speaking and parliamentary procedure, practical psychology, first aid, and other subjects equally important.

As another phase of the organization's activities the Library will continue to function for the benefit of the members. The Library is composed of a fine collection of articles on dental subjects culled from the dental press, as well as a book containing a pictorial history of dentistry, dental equipment and instruments. There is also a book on dental office procedure, which contains many helpful suggestions for efficient management and service. The Librarian may be addressed: Janet Yates, c/o Dr. S. R. Eolis, Times Building, Times Square, New York, N. Y.

At a regular meeting of the Educational and Efficiency Clinic Club on September 16th an interesting and valuable lecture clinic was presented by Dr. S. Abraham on *Some Important Phases of Orthodontia in Relation to the Dental Assistant.* Meetings of the Clinic Club will be continued throughout the year on the third Monday evening of each month, when the various sections will be demonstrated by members, and authorities on the different phases of dentistry will lecture. Members of the Society are eligible to membership and are urged to join. Ethel R. Meyerson, Director, may be addressed at 27 West 86th Street, New York, N. Y.

The Society meets regularly on the second Tuesday evening of each month, October to May, inclusive, at the Academy of Medicine, New York. Dental assistants employed in ethical dental offices are welcome to affiliate and enjoy the educational advantages afforded by membership and association with others engaged in a mutual endeavor. The Society does not conduct a registry nor is it connected with any commercial enterprise.

A cordial invitation to attend the meetings is extended to the members of the dental profession and to their assistants.

EXTRACTIONS

No Literature can have a long continuance if not diversified with humor—*ADDISON*

"A dentist," said an authority on sport, "should always make a good golfer. Look at the wrist movement."

FAMOUS TRAITORS

A California doctor advised one of his patients to make a change of climate to improve his health.

This is why auto drivers are always in such a big hurry: They are speeding up to get in front of you so they can slow down.

IT HAPPENED IN CHICAGO

A nice little girl was playing on the beach in her bathing suit. After a while she wandered to the lawn of a nearby dwelling. A police officer spied her and said: "Hey, there, little girl, it's against the law to be on a lawn in a bathing suit." The good little girl, not wishing to break the law, took off the suit.

The poor little birdie cooped up in its gilded cage, with no job to worry about, no crowded streets to cross, no new shoes to break in, and no dishes to wash, should be kicked out for not singing.

When you hand the street car conductor an old five-dollar bill, and he asks you if you haven't something smaller, be nonchalant and hand him one of the new five-dollar bills.

(Efficiency Expert)—Come, come, my man, you mustn't smoke at your work.

(Mechanic)—Who's working?

According to the papers, brokers are opening branch offices in ocean liners. Isn't that a terrible place to have the bottom drop out of anything!

Nothing makes a mouse feel so mean and disappointed as when it meets a woman in knickers.

When purchasing a car a fellow will tell the Bureau of Motor Vehicles he intends using it for pleasure only, and the first thing you know he's taking his family on picnics in it.

The prize riddle of today is how the heck can a chicken cross the road!

I don't know why a chrysanthemum wilts so soon, unless it's because after it has been born a few days it learns its name.

AND THE BAND PLAYED RAMONA

God did not make woman from man's head to be above him; nor from his feet to be beneath him. But from his side to be with him, under his arm to be protected and near to his heart to be loved.

(Judge)—Prisoner, have you anything to say?

(Prisoner)—Assuredly, your Honor. I desire to state without reserve or circumlocution that the penalty imposed should be in keeping, or, as it were, commensurate with my station in life, which has hitherto been of no inconsiderable importance.

(Judge)—Well, you seem to have a liking for long sentences. Ten years.

It's a downright pitiful sight to see a young couple sitting on a porch, slowly dying of thirst, and no auto to take them to the drug store fully a block away.

(Mother)—I declare, Lucy, your dress barely covers your body.

(Lucy)—Well, ma, what's the matter with my body?

Polygamy would never work well in this country. Think of six or eight wives in a kitchenette.

A newcomer to town stopped to look at a sign in front of a lawyer's house, and asked the owner this question: "Why do you have such a sign up—A. Fraud, Lawyer—why not at least put in your first name?" The lawyer said: "My first name is Adam."

(Conductor, after stumbling over obstacle in the aisle)—Madam, you must not leave your valise in the passageway.

(Colored Lady)—Fo' de lan' sakes, dat ain't no valise—dat's mah foot.

(Aunty)—Bobby, why are you so unkind to nurse? Don't you like her?

(Bobby)—No, I hate her. I'd like to pinch her cheeks like daddy does.

A doctor and a dentist were intimate friends for many years, but neither knew the age of the other. (Aberdonians never give anything away.) At last the dentist died, and the doctor thought that he would now be able to ascertain his friend's age. He attended the funeral, approached the coffin, and looked at the brass plate. This is what he read:

Angus McLeod: Dentist. (Hours 10-4).

FUTURE EVENTS

THE AMERICAN ACADEMY OF PERIODONTOLOGY will hold its annual meeting at the Hotel Carlton, Washington, D. C., October 3-5, 1929.

JULIAN SMITH, *President,*
1107 Medical Arts Bldg., Dallas, Texas.
CLAYTON H. GRACEY, *Secy.-Treas.,*
269 Rowena Ave., Detroit, Mich.

EASTERN DENTAL SOCIETY

SCIENTIFIC SESSION

Thursday Evening, October 3, 1929

Meeting Place: 425 Lafayette Street, New York

Essayist: James P. Ruyl.

Subject: *A Simplified Technic of Modeling Compound Impressions.*
Illustrated with lantern slides.

Essayist: Francis Scott Weir.

Full Denture Construction for the General Practitioner.
Illustrated with lantern slides.

Round Table Discussions (in Amphitheatre)—8:15 P. M. Sharp.

Subject: *Full Dentures for the General Practitioner.*

Leader: H. E. Tompkins.

EASTERN DENTAL PROGRESSIVE CLINICS

A series of clinics covering the subject of *Full Dentures* in detail will begin promptly at 7:30 P. M.

Clinicians: Joseph Ader—*Full Dentures.*

Herbert R. Berger—*Rebasing of Full Dentures, by an Original Technic.*

M. M. Bogdonoff—*Taking the Bite Scientifically (Centric Relation Record).*

Samuel S. Eisner—*Full Upper and Lower Impressions in Compound.* (Practical Demonstration on Patient.)

M. Goldenberg—*Tooth Arrangement.*

L. G. Jordan—*The True Meaning of Unstrained Intermaxillary Records and How They May be Obtained.*

Joseph S. Landa—*Importance of the Face-Bow Record from a Theoretical and Practical Standpoint.*

Vethake E. Mitchell—*The Prosthetic Treatment of Congenital Cleft Palate.*

Max M. Schwartz—*The Schwartz Simplified Technic of Full Denture Construction for the General Practitioner.*

Paul Shapiro—*Double-Tray Impression Method for Full Dentures in Plaster.*

S. J. Sheckter—*Some Essentials in Constructing Full Upper and Lower Dentures.*

S. Waterman—*Impression Technic for Full Lower Denture.*

PAUL DAVID, *President,*
LOUIS LERNER, *Chairman Executive Board,*
11 West 42nd St., New York.

HUDSON COUNTY DENTAL SOCIETY

OCTOBER 5, 1929

George B. Winter, Professor of Exodontia at the Washington University School of Dentistry, St. Louis, and noted author of *Exodontia of the Impacted Mandibular Third Molar,* will be the essayist at the October meeting of the Hudson County Dental Society, Jersey City, N. J.

Dr. Winter, recognized as one of the most eminent international authorities in oral surgery because of his profound knowledge, vast experience and extraordinary ability, is noted also for aptitude in presenting in a most unusual and instructive manner the subject with which he is most intimately associated.

At this meeting he will give the fruits of his labors in a paper entitled *A Report on the Results of Ten Years of Research in the Exodontia of the Impacted Mandibular Third Molar.* This talk will be one of the most unusual of his career. It will depict not only theoretical but also practical findings. It will be illustrated by lantern slides of practical cases and practical procedures that every practitioner will be anxious to see.

A capacity attendance is a foregone conclusion.

At six o'clock, preceding the lecture, there will be a formal dinner in honor of Dr. Winter in the Grand Ball Room of the Hotel Plaza, Journal Square, Jersey City, N. J. Reservations for this dinner may be made by communicating with Dr. Frank J. Houghton, Chairman of the Dinner Committee, Trust Company of New Jersey Building, Jersey City, N. J.

At eight o'clock the lecture will be presented in the Grand Ball Room.

This program is scheduled for Saturday, October 5, 1929, the Saturday immediately pre-

ceding the National Meeting. All the members of the American Dental Association are cordially invited. Those en route to the National Meeting will find Jersey City an ideal stop-over and this meeting of the Hudson County Dental Society a rare treat.

THE BALTIMORE COLLEGE OF DENTAL SURGERY, Dental School of University of Maryland, Baltimore, Md., will dedicate its new Dental Building on Saturday, October 5, 1929. This day will be known as Alumni Day; Friday, the 4th, will be Class Reunion Day; Sunday, the 6th, will be Recreation Day; Monday, the 7th, the meeting will go to Washington, D. C., to attend the American Dental Association Convention.

In the near future a chairman will be appointed from each class to get his classmates together for a grand reunion.

HORACE M. DAVIS, *Chairman,*
Dedication Committee,
Medical Arts, Bldg.,
Baltimore, Md.

WALTER E. GREEN, *Chairman,*
Class Reunion Committee,
2958 West North Ave.,
Baltimore, Md.

THE SUPREME COUNCIL, ALPHA OMEGA FRATERNITY, will hold its preconvention meeting at the Burlington Hotel, Washington, D. C., on Monday, October 7, 1929. The meeting will be followed by a dinner for all attending fraters.

Those expecting to attend should notify Dr. W. I. Ogus, Farragut Apts., Washington, D. C. Make hotel reservations direct.

By order of Samuel Birenbach, *Supreme Chancellor.*

A. M. FLASCHNER, *Supreme Scribe,*
419 Boylston St., Boston, Mass.

Fraters:

A new directory is to be published. Your full name, address and school with class year are requested.

THE FELLOWS OF THE INTERNATIONAL COLLEGE OF DENTISTS will hold a meeting at the Mayflower Hotel, Washington, D. C., October 7-11, 1929, at a time not in conflict with any of the activities of the American Dental Association, or with its affiliated or associated organizations.

LOUIS OTTOFY, *Registrar,*
175 Vernon Terrace,
Oakland, Cal.

THE AMERICAN DENTAL HYGIENISTS' ASSOCIATION will hold its sixth annual convention at Hotel Powhatan, Washington, D. C., October 7-11, 1929.

Make your reservations early.

AGNES G. MORRIS, *General Secretary,*
886 Main St., Bridgeport, Conn.

THE MASSACHUSETTS BOARD OF DENTAL EXAMINERS will hold an examination for registration for both dentists and oral hygienists in the City of Boston, Massachusetts, October 21-23, 1929. Full information, application blanks, etc., may be secured at the office of the Secretary, Room 146, State House, Boston.

All applications must be filed at the office of the Secretary at least ten days before date set for examination.

W. HENRY GRANT, D.M.D., Secretary.

THE INDIANA BOARD OF DENTAL EXAMINERS will meet at 8 A. M., November 11, 1929, at the State House, Indianapolis, Indiana, in the room of the House of Representatives, for the purpose of examining all applicants with proper credentials. Applications should be in the hands of the secretary one week before the Board meeting.

For applications, clinical requirements and other information, address

J. M. HALE, *Secretary-Treasurer,*
Mt. Vernon, Indiana.

THE CONNECTICUT DENTAL COMMISSION will meet at Hartford, Conn., on November 18-21, 1929, for the examination of applicants for license to practice dentistry and dental hygiene and to transact any other business proper to come before it.

Applications should be in the hands of the Recorder at least one week before the meeting. For application blanks and further information, apply to

ALMOND J. CUTTING, *Recorder,*
Southington, Conn.

A competitive examination for appointment to the DENTAL CORPS OF THE UNITED STATES NAVY will begin on December 2, 1929, at the U. S. Naval Medical School, Washington, D. C. Candidates must be citizens of the United States, between 21 and 32 years of age at the time of appointment, and graduates of recognized dental schools. The examination will be both theoretical and clinical, and the

usual duration is about seven days. A circular containing full information relative to the Dental Corps and the prescribed form of application may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. No allowance is made for the expense of applicants appearing for examination.

C. E. RIGGS, *Surgeon-General,*
U. S. Navy.

GREATER NEW YORK DECEMBER MEETING FOR BETTER DENTISTRY

The First and Second District Dental Societies, New York, will continue the series of meetings which were formerly conducted by the First District Dental Society and widely known as the *December Meeting for Better Dentistry.* The meeting this year, which is the Fifth Annual Meeting of this kind, will therefore be conducted jointly by the two societies at the Hotel Pennsylvania, New York, December 9-13, 1929.

Among the essayists and clinicians who have accepted invitations to be present are Wallace Seccombe, Toronto; J. R. Blayney, John B. LaDue, Chicago; Chalmers J. Lyons, Ann Arbor; Charles A. Lane, Albert L. LeGro, P. Kyprie, Detroit; Dayton D. Campbell, Kansas City; James M. Prime, Omaha; Hugh W. MacMillan, Carlos H. Schott, Cincinnati; Theodore W. Maves, Cleveland.

The meeting will be continued on the same plan as previous meetings, namely, one fee admitting members to all lectures, clinics, etc.

A subscription blank and list of clinics will be ready for circulation on November 1st.

There will be a manufacturers' exhibit in the hotel during the meeting.

JOHN T. HANKS, *Chairman.*

THE CHICAGO DENTAL SOCIETY

SIXTY-SIXTH ANNUAL MEETING AND CLINIC
JANUARY 13-15, 1930

The Chicago Dental Society wishes to announce the 1930 Annual Meeting and Clinic at the Stevens Hotel, where full provision is made for the comfort of all those in attendance. The experience of conducting the 1929 Meeting at the Stevens has provided a basis for conducting the next meeting, which without doubt will reflect in a substantial measure the increasing importance of this annual event.

All members of the American Dental Association are cordially invited to attend. Preliminary programs will be mailed to all members of the A. D. A. some time in December of this year. The program will be divided into eight sections, as follows:

Section I—Operative Dentistry.
Chairman: Frank G. Conklin, 4010 West Madison St.
Vice-Chairman: A. E. Schneider, 25 East Washington St.

Section II—Full Dentures.
Chairman: E. C. Pendleton, 916 Galt Ave.
Vice-Chairman: S. A. Hutt, 3166 Lincoln Ave.

Section III—Partial Dentures; Crown and Bridge.
Chairman: W. I. McNeil, 59 East Madison St.
Vice-Chairman: R. A. Jentzsch, 185 North Wabash Ave.

Section IV—Oral Pathology, Histology, Bacteriology and Chemistry.
Chairman: J. R. Blayney, 2209 Rosemont Ave.
Vice-Chairman: W. G. Skillen, 311 East Chicago Ave.

Section V—Mouth Hygiene and Public Health.
Chairman: Lon W. Morrey, 4235 North Hermitage Ave.
Vice-Chairman: Corvin F. Stine, 1319½ Estes Ave.

Section VI—Orthodontia.
Chairman: Abram Hoffman, 311 East Chicago Ave.
Vice-Chairman: Harris W. McClain, 55 East Washington St.

Section VII—Oral Surgery and Radiography.
Chairman: Roscoe L. Stout, 55 East Washington St.
Vice-Chairman: Joseph G. Wiedder, 25 East Washington St.

Section VIII—Dental Economics.
Chairman: Harold S. Smith, 180 North Michigan Ave.
Vice-Chairman: F. van Minden, 185 North Wabash Ave.

The Program Committee is under the direction of Stanley D. Tylman, assisted by Henry C. Lee, E. C. Pendleton and Roscoe L. Stout.

The manufacturers' and dealers' exhibits will be held in the spacious Exhibit Hall, one flight down from the main floor. All applications for exhibit space should be directed to Dr. C. Davidson, Chairman Exhibit Committee, 55 East Washington St., Chicago, Ill.

HUGO G. FISHER, *President,*
HOWARD C. MILLER, *Secretary,*
55 East Washington St., Chicago, Ill.

THE PENNSYLVANIA STATE DENTAL SOCIETY will hold its Mid-Winter Meeting January 30-31, 1930, at the Penn-Harris Hotel, Harrisburg, Pa. A splendid program is being prepared.

RICHARD D. CROWLEY,
111 North Second St., Harrisburg, Pa.

THE DENTAL SOCIETY OF THE STATE OF NEW YORK will hold its Sixty-

Second Annual Meeting on May 13-16, 1930, at Hotel Commodore, New York, N. Y.

A cordial invitation is extended to all ethical dentists resident in the United States and Canada.

Exhibitors desiring space should address Dr. T. C. Swift, 1 Park Avenue, Mt. Vernon, N. Y. Please apply early for information and space.

The usual preliminary program will be issued in January, 1930, and the official program in April, 1930.

For further information, address

A. P. BURKHART, Secretary,
57 East Genesee St.,
Auburn, N. Y.

THE NORTH CAROLINA DENTAL SOCIETY will hold its next annual meeting at Asheville, N. C., May 5-8, 1930.

DENNIS KEEL, D.D.S., *Sec't-Treas.*,
Greensboro, N. C.

LAST CALL

Meeting of American Dental Association

Washington, D. C.

October 7-11, 1929